Chemical Week

July 30, 1955

Price 35 cents

Companies will have to cement relations with a fast-growing public—their stockholders . p. 20

Research directors are making less than $10,000 to more than $50,000; here's why . . . . . p. 32

Spencer's McArthur and Sharp see trend to solution-ammoniated high-analysis fertilizer . . . p. 38

Carbide furnaces aren't cold; industry finds flaws in government's gloomy survey . . . . p. 55

They're good, but will they sell? Do-it-yourself textile softeners make bid . . . . . p. 61

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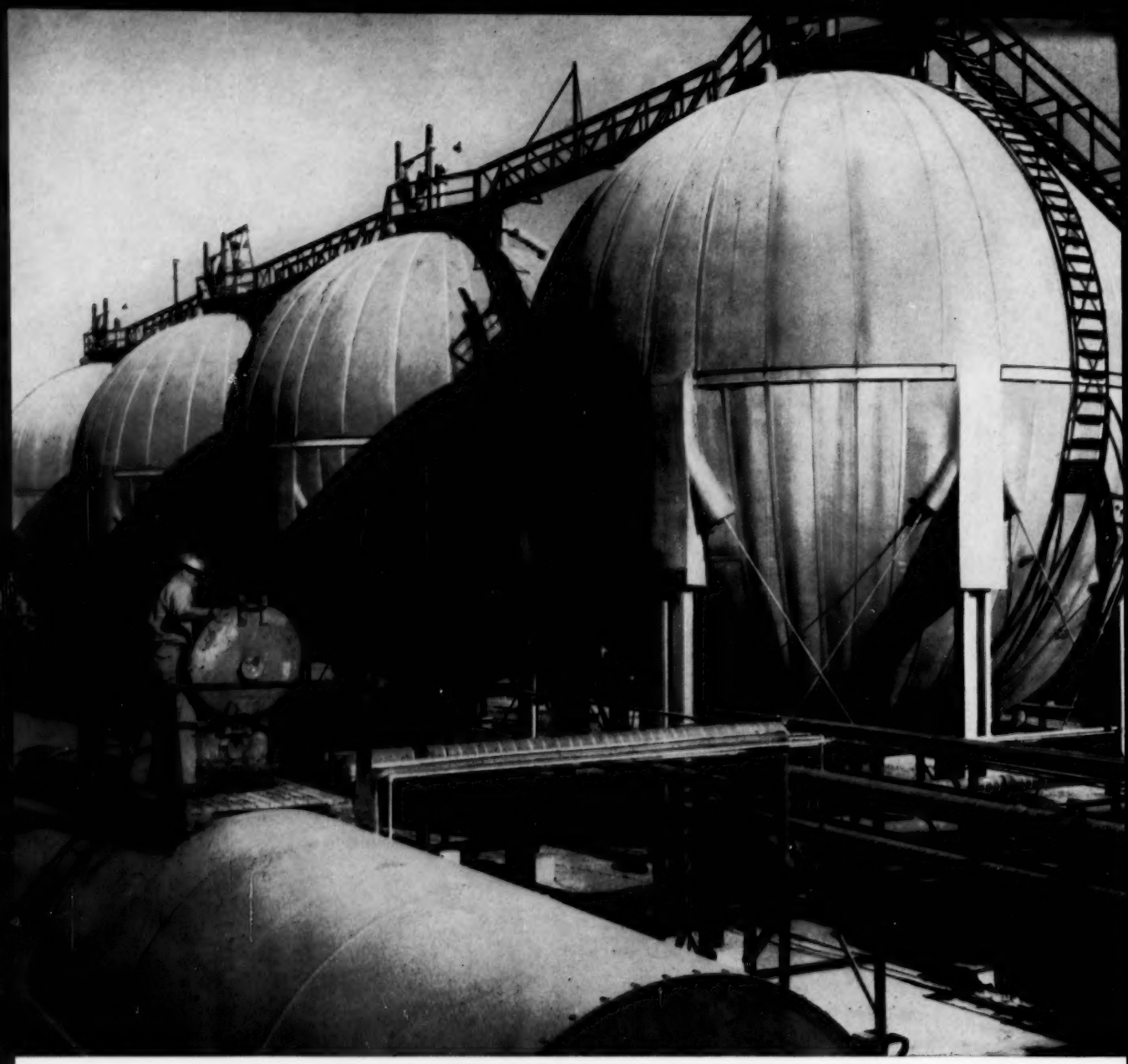

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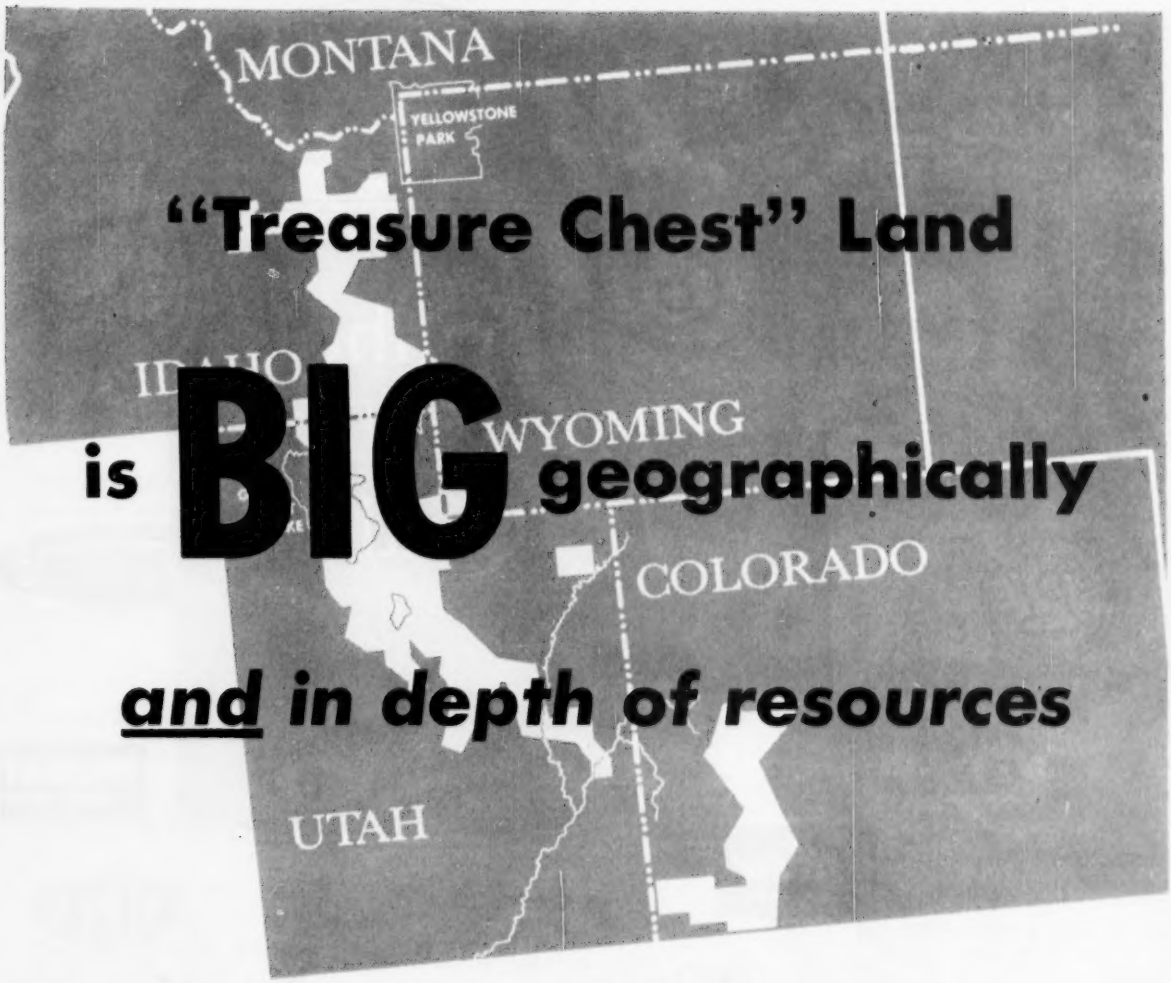

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Chemical Week

Volume 77 — **July 30, 1955** — Number 5

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Nature has played some pranks in its distribution of fresh water. She has acted Lady Bountiful in many parts of the area served by the West Penn Electric System—in the five states of Maryland, Pennsylvania, West Virginia, Ohio and Virginia. Ample water for processing and cooling is available there the year around in numerous rivers and streams and in proven underground sources.

Choice plant sites with good water resources are steadily dwindling while industry's over-all need is rapidly growing. Reporting on the Nation's water resources for the Federal Government, a prominent hydrologist concludes that "by 1975 water supply may be the most important factor affecting plant location."

If you need water to make your product, look into this question of future water supply. For quick facts on plants and plant sites with abundant water, phone our Area Development Department, WHitehall 4-3740—or send in the coupon below.

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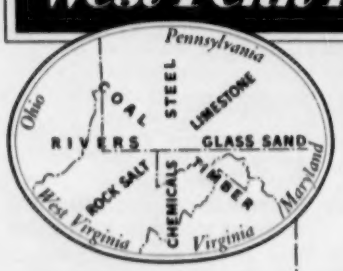

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OPINION . . . .

First Synthesis

To the Editor: Mr. Aaron Addelston's letter (*June 25*) criticizing your treatment of an Italian newspaper report on 5-hydroxytryptamine was well taken. Unfortunately, his comment lost much of its punch by including two errors . . .

Serotonin is not Upjohn's trademark for 5-hydroxytryptamine. The name "serotonin" was coined by Rapport and Page for a substance isolated from blood serum and later proved to be 5-hydroxytryptamine. The synthesis of this substance was first announced by this writer and F. E. Fischer in J.A.C.S. (*73*, 5007, 1951). . . .

K. E. Hamlin
Asst. Head of Organic Research
Abbott Laboratories
North Chicago, Ill.

Antacid Discovery

To the Editor: In a brief item you stated (*July 2, p. 65*) that two new antacids, namely dihydroxy aluminum sodium carbonate and dihydroxy aluminum aminoacetate, have been discovered at the Philadelphia College of Pharmacy and Science.

John Krantz at the University of Maryland reported the discovery of dihydroxy aluminum aminoacetate in November, 1944 and we have marketed a preparation called Alzinox which contains this chemical since October, 1948.

The second compound, dihydroxy aluminum sodium carbonate, was discovered by Grote and his co-workers at the Brayten Pharmaceutical Co. and was discussed at the Boston meeting of the American Pharmaceutical Assn. in August, 1954 . . .

Robert A. Walsh
Director of Research and
Product Development
The E. L. Patch Co.
Stoneham, Mass.

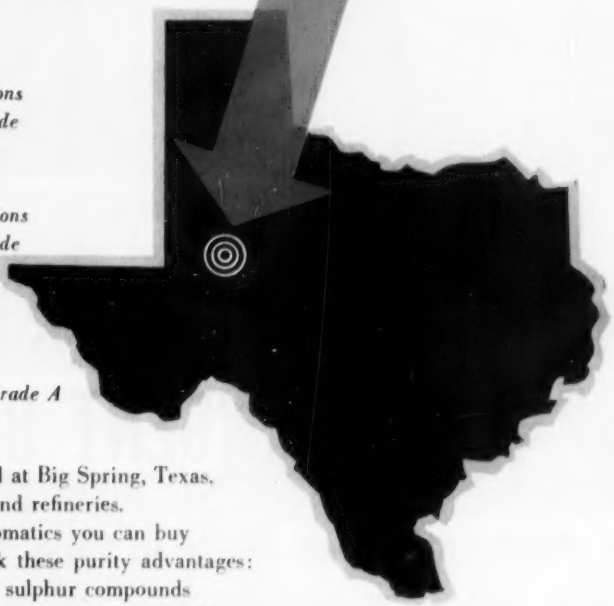
To the Editor: In the news article

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

BTX

from the heart of the West Texas oilfields . . .



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A. S. T. M. D835-50, Nitration Grade
Federal Specification VV-B-231-a

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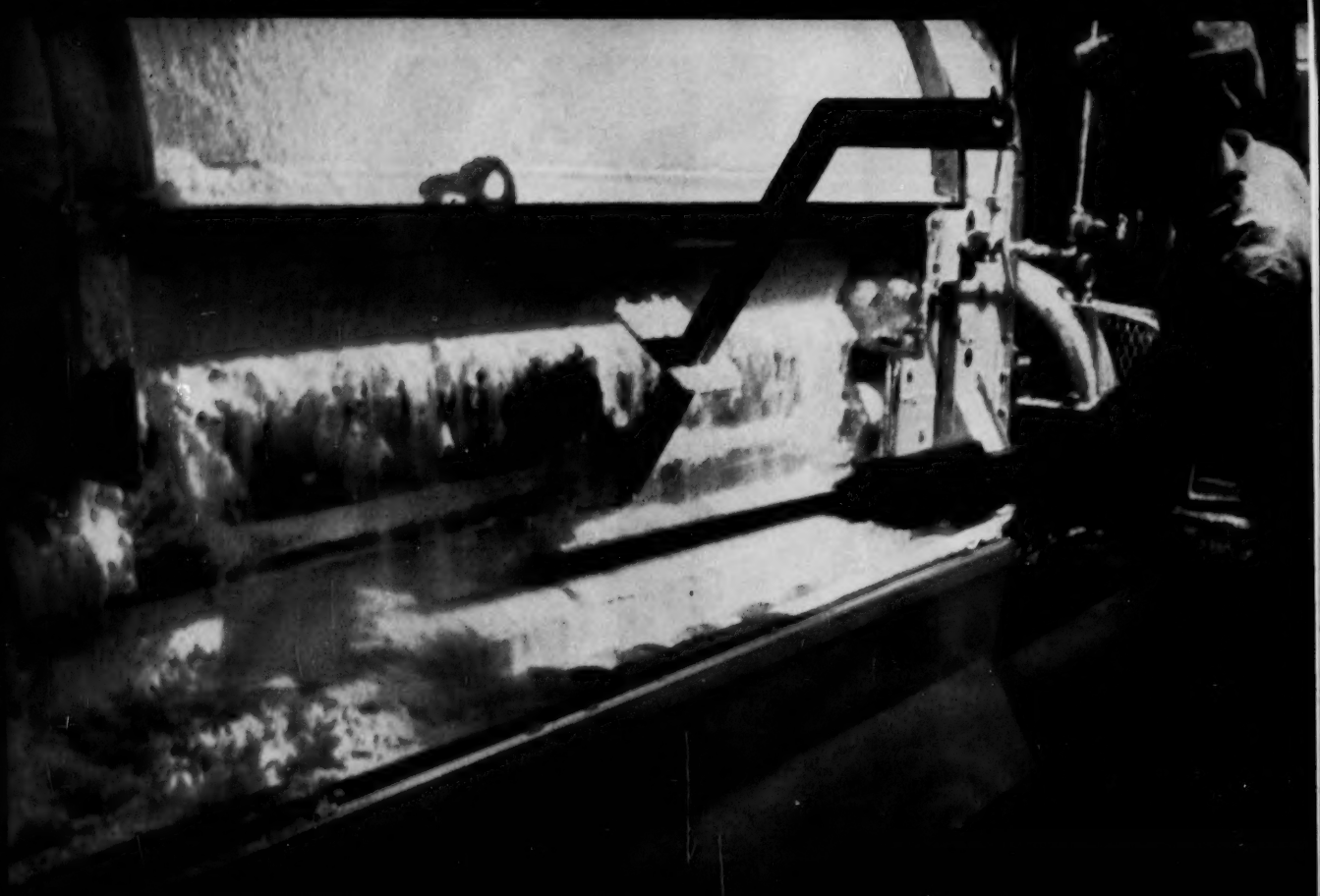

TWIN DRUM DRIERS process sodium phosphate from mixing tank and pass it into elevator which moves it into position for screening.

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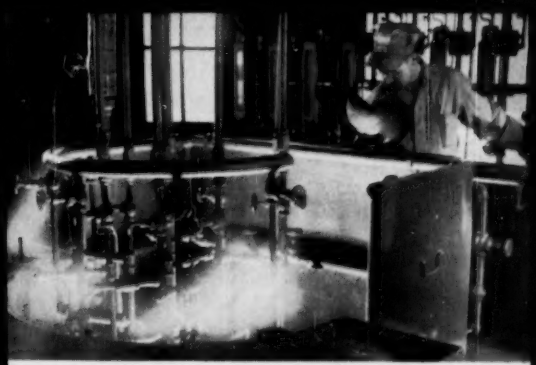
Monsanto Leads World in Sodium Phosphates Output

In Trenton, Michigan, Monsanto operates an automation-type chemical plant which annually produces millions of pounds of phosphate compounds, including STP, DSP, TSPP, TSP and MSP consumed by the detergent industry. The quantities produced make Trenton the industry's largest single source. Other compounds round out the most complete phosphate supply available anywhere in the world.

To use this matchless source, you need only talk to one of Monsanto's staff of representatives. His sole job is to assure you of the best products and service available. Why not invite one to visit you at your convenience? Check your phone book for a local Monsanto office, or write: MONSANTO CHEMICAL COMPANY, Inorganic Chemicals Division, 710 N. Twelfth Street, St. Louis 1, Mo.

NERVE CENTER for entire department is this large control board. Numerous gauges give instantaneous readings and make permanent records to assure Monsanto customers of quality control.



SHIELDED FACE of Monsanto technician peers into burning tower where liquid phosphorus feeds into jets of compressed air, oxidizes to P_2O_5.

HOPPER CAR on special spur in Monsanto plant area takes on milled sodium triphosphate through conveyor tube from track-side silo.

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OPINION . . . . . .

you published on antacids last year (*Oct. 23, '54, p. 61*) you made prominent mention of our patented dihydroxy aluminum amino acetate and our dihydroxy aluminum sodium carbonate, on which a patent application is in process . . .

In your July 2 issue this year, however, you mention the "discovery" of these compounds by scientists at the Philadelphia College of Pharmacy and Science . . .

We feel quite sure that it was intended to report that in an ulcer study at that college, these compounds had been found to be the most effective of a large group of materials tested—not that the college invented the compounds . . .

LUPTON PATTEN
President
The Chattanooga Medicine Co.
Chattanooga, Tenn.

We erred. Both Readers Patten and Walsh are right—and we should have had longer memories. The college merely "discovered" these antacids to be the most effective of the group tested.

As we clearly pointed out in our previous discussion of antacids: "Dihydroxy aluminum aminoacetate . . . has been available since the late 1940's . . . is sold in some ethical compounds such as Patch's Alzinox . . . is best known as an ingredient of Bristol-Myer's aspirin compound, Bufferin. Sole U.S. manufacturer is Chattanooga Medicine . . .U.S. production is well over 100,000 lbs. per year . . ."—ED.

Medical Counsel

TO THE EDITOR: In quoting me in your July 2 issue (*p. 32*) you correctly referred to me as a medical consultant to the International Chemical Workers Union . . . There seems to have been, however, some misunderstanding on the part of labor readers as to my occupational connection . . .

I should be appreciative, therefore, if you would point out that my full-time work consists of directing the Union Health Service, Inc.—a labor-sponsored health center prepayment plan; I am engaged as a medical consultant to the ICWU on a part-time basis . . .

HERBERT K. ABRAMS
Medical Consultant, ICWU
Chicago, Ill.

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Prepared by U. S. Industrial Chemicals Co.

U.S.I. CHEMICAL NEWS

July 30 ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1955

ATTENTION

Users of Taxfree and Specially Denatured Alcohol

Now is the time for users of specially denatured alcohol to renew their basic permit (Treasury Department Form 1479) for 1956. It is also time for users of taxfree alcohol to complete and file with the Assistant Regional Commissioner – Alcohol and Tobacco Tax Division—their application (Form 1450) for renewal of their Taxfree Alcohol permit for 1956.

Permittees who withdraw industrial alcohol in drums should note that U.S.I. and most of the chemical industry will increase standard filling of drums to 55 wine gallons each (currently 54 gallons) at the start of 1956. It is recommended that total gallonage of renewal permits be calculated to cover withdrawals in multiples of 55.

If you require renewal forms or any assistance in their preparation, please call your nearest U.S.I. office.

U.S.I. High Molecular Weight Polyethylene Will Coat Paper Too

U.S.I.'s Petrothene 200, an all-purpose polyethylene resin developed for extrusion of packaging film and molding of semi-rigid forms, exhibited some unexpected characteristics during tests recently. The resin was successfully extruded as a laminate for paper coating, an application usually reserved for lower molecular weight types.

At the same time, the material was extruded successfully as unsupported lay-flat tubular and flat film forms, the most demanding operation for high molecular weight types of polyethylene. Further tests are being conducted to confirm the unexpected versatility of Petrothene 200.

Chemical Producers Going To New Drum Standard

As a move toward higher materials handling efficiency, more and more chemical and petroleum producers are going to drums with both openings in the head, none on the side. The drum commonly in use today has a two-inch opening on the side and a ¾ inch opening in the head, and frequently complicates handling in a customer's plant. U.S.I. is switching to the new drum on some of its products within the next few months.

The new type drum meets the Universal Standard Drum Specifications as set up by the Petroleum Packaging Committee and the Steel Shipping Container Institute.

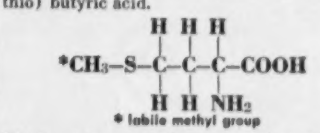
METHIONINE CALLED "MIRACLE" AMINO ACID

Versatility of Methionine Leads to Increased Use in Pharmaceutical, Medical, Veterinary Fields: Is Now Playing Vital Role in Animal Nutrition

Outstanding results with methionine have prompted a leading medical authority to suggest that this essential sulfur amino acid may in the future be as important as today's "miracle" antibiotics. According to this authority, there are few materials, if any, with such unusual diversity in their medical uses.

Essential to Growth, Metabolism

Methionine is necessary for growth, repair and metabolism of all human and animal tissue. Chemically it is DL-2-amino-4-(methylthio) butyric acid.



* labile methyl group

Much of its versatility is attributed to the carbon-sulfur linkage and the labile methyl group. Newer techniques in biochemical research have brought out some of the following characteristics:

- ... Aids in converting dietary protein to tissue protein
- ... Maintains nitrogen balance
- ... Participates in sulfur metabolism
- ... Has trans-methylation activity
- ... Is a precursor of bile acids and improves liver function
- ... Helps rebuild damaged kidney tissue
- ... Speeds wound healing
- ... Helps overcome adverse effects of stress factors such as temperature extremes, disease, overmedication, etc.
- ... Increases antibody production
- ... Acts as a detoxifier, overcoming effects of many toxic compounds due to accidental ingestion, overmedication, tissue injury, heavy metals, etc.
- ... Helps hormone activity

Many Pharmaceutical Applications

Methionine is valuable for its detoxifying properties and for preventing fatty infiltration of the liver. It has been used in formulas in

MORE

Crystals of DL-Methionine as seen under a microscope.

Ammonia Ups Efficiency of Lube Oil Refining

Where lube oil feed stocks run high in undesirable naphthenic acids, satisfactory removal by the usual solvent extraction method becomes highly uneconomical. An excessive amount of solvent must be used. Yields are cut.

According to a recent patent, the problem is now being solved by the addition of ammonia to the solvent-oil system. Neutralization numbers – measures of naphthenic acid content – have been reduced to well below the acceptable 0.1mg. KOH per g. of oil, where values up to 0.2 had previously been obtained. Ammonia is used in amounts below one percent based on the volume of oil.

This is one of several new industrial uses for ammonia that have been revealed within the past few months. Year-round applications of this kind help to smooth out the extremely seasonal fertilizer demand curve which has caused concern to ammonia manufacturers anxious to maintain uniform production levels from month to month.

Right now U.S.I. and other ammonia producers are filling storage facilities left empty by the just-completed fertilizing season.

Sodium-Butadiene Reactions Produce New Chemicals

Buna rubber derives its name from a BUtadiene-Na reaction developed in England and Germany simultaneously, and industrially important in Germany during the late 1920's. Inability to obtain high sodium surface area at that time resulted in poor control and led to a change in the process.

Today new butadiene-sodium reactions are reaching commercial importance. One reason for this renewed interest has been the development by U.S.I. of sodium dispersions – stable suspensions of microscopic sodium particles in inert hydrocarbon media. This new form permits controlled reaction temperatures, increased yields and decreased side reactions.

Recent patents have been issued covering new butadiene-

MORE

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July 30 ★ **U.S.I. CHEMICAL NEWS** ★ 1955

CONTINUED

Methionine

dermatology and cosmetics and has been found effective for treatment of acne and falling hair. Addition of methionine to infant formulas has been found helpful in overcoming diaper rash. Pediatric experience has shown that daily additives of 180 milligrams of methionine to infant formulas have produced optimum gains in weight. This has led progressive manufacturers to use it in specialized supplements for young children. It is also an important metabolite in geriatric preparations. Oral ingestion of methionine has been reported effective in removing warts. It has improved the ability of the eye to become adjusted to night vision, an effect found to last from 24 to 32 hours. Methionine has been found valuable in the treatment of obstetric complications associated with liver damage of the mother and newborn often due to Rh incompatibility.

Essential in Healing

Trace studies with "tagged" compounds have proved that methionine plays an essential role in the synthesis of connective tissue and increases the rate of wound healing. Topical application of N-acetyl DL-methionine has helped in healing varicose leg ulcers which had not responded to other treatment.

Aids in Metabolic Balance

Nitrogen retention studies show that metabolic balance is affected by methionine. This compound has been more effective than Vitamin B_{12} for promoting weight recovery following protein starvation. Methionine reportedly assists in restoring normal metabolism after experimental overdoses of thyroid hormone. Other experiments indicate that certain liver disorders and anemia can be alleviated by adding methionine to the diet. It has been tested and found effective for reduction of blood cholesterol levels. Methionine aids hormone activity and, according to recent reports, injection of methionine has produced significant response in experimental animals.

Necessary in Animal Feeds

Feed manufacturers add methionine to various rations for increased growth and feed efficiency. Methionine in dog food formulations makes more of the protein in the ration available for growth and maintenance of health.

It has recently been reported that a direct relationship exists between methionine requirements and the energy level of the diet. Such a direct relationship is of great importance in formulation of high energy rations. Price reductions of feed grade methionine in the last few years have made it even more practical to include optimum amounts of methionine in manufactured feed.

Alcohol Injections To Brain Curing Parkinsonism

A New York doctor has devised an operation using absolute alcohol to relieve the uncontrollable tremor of Parkinson's disease. He inserts a plastic tube into the gray matter of the brain and injects procaine, which should check the tremor temporarily. If it does, he is sure the right spot has been reached, and absolute alcohol is then injected to do the job permanently. Of the first few cases, more than half have been free of symptoms for many months now.

Alcohol has been widely used as a nerve blocking agent and for many other medical and pharmaceutical applications. The new operation adds another to its varied functions as a medical tool.

CONTINUED

Sodium

styrene copolymers prepared with a dispersed sodium catalyst. Products based on these patents are now being marketed in the form of oils which can be converted to resinous materials at elevated temperatures. The recently announced U.S.I. Isosebacic* acid is made by still another reaction between butadiene and sodium.

*Trade Mark

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

Flaws on metal surfaces are being located by means of a penetrating red dye followed by a white developer which pulls the hidden penetrant to the surface, giving a red on white evidence of imperfections. **(No. 1100)**

Porous aluminum with uniformly ultra-fine pore size is now made by a unique powder metallurgy process. The material, with pore openings ranging from 5 to 150 microns, can be used as a filtration and gas dispersion medium. It is formed and welded readily. **(No. 1101)**

A new type heavy-gage polyethylene liner for steel containers is available for installing as an integral part of the container during production. Electronically sealed, with closed top, the liner makes possible liquid shipping at reduced costs. **(No. 1102)**

Odorless paints with excellent resistance to acids, alkalies and cleansers are now produced for food and other plants where odors hamper manufacture. They contain an odorless solvent specially distilled from petroleum. **(No. 1103)**

New products control static electricity during microscopic and analytical work and in the laboratory where flammable solvents are used. Small quantities are applied to synthetic textile clothing; and to surfaces in general. **(No. 1104)**

An acrylate-type elastomer has been developed with high resistance to petroleum and chemical hydraulic fluids and to ozone. It is recommended for hydraulic packings, hose liners, wire coatings and fabric impregnants. **(No. 1105)**

Two new radioactive carbon-14 compounds are now available commercially. They are cetyl-1-C-14 and stearyl-1-C-14 alcohols, useful for tagged detergent and metabolic studies. **(No. 1106)**

A thin protective coating for metal parts and assemblies has been developed to replace heavy viscous types. It provides maximum corrosion protection and moisture repellency, plus lubrication. **(No. 1107)**

A new liquid laundry rinse reduces static and repels dirt. When added to final rinse water, the positively charged liquid attached to negatively charged fibers, makes clothes soft, fluffy and dirt repellent. **(No. 1108)**

A new vinyl chloride extrusion compound contains a non-migratory type of plasticizer and a specially selected fungicide. It was developed specifically for the extrusion or molding of vinyl parts which must contact styrene. **(No. 1109)**

PRODUCTS OF U.S.I.

ALCOHOLS
Butanol (Normal-Butyl Alcohol)
Fusel Oil — Refined
Ethanol (Ethyl Alcohol)
Specially Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U. S. P., Absolute—200 Proof
Filmex*—special proprietary solvent
Solox*—proprietary solvent—regular and anhydrous

ETHERS
Ethyl Ether, U. S. P.
Ethyl Ether, Absolute—A.C.S.

ACETONE—A.C.S.

ANSOLS
Ansol* M
Ansol* PR

ACETIC ESTERS
Butyl Acetate
Ethyl Acetate—all grades
Normal-Propyl Acetate

OXALIC ESTERS
Diethyl Oxalate

OTHER ESTERS
Diatol*
Diethyl Carbonate

INTERMEDIATES
Acetoacetanilide
Acetoacet-ortho-chloroanilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

FEED PRODUCTS
Calcium Pantothenate (Feed Grade)
Choline Chloride Products
Curbay B-G* 80
DL-Methionine (Feed Grade)
Niacin, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay*
U.S.I. Vitamin B_{12} and Antibiotic Feed Supplements
Vacatone* 40
Vitamin A, D_3, and K_3 Products

PLASTICS
Petrothene** Polyethylene Resins

OTHER PRODUCTS
Anhydrous Ammonia
Caustic Soda
Ethylene
Liquid Chlorine
Metallic Sodium
DL-Methionine (Pharm.)
N-Acetyl DL-Methionine
Nitrogen Solutions
Propionic Acid
Riboflavin U.S.P.
Sulfuric Acid
Urethan, U.S.P.

*Reg. U.S. Pat. Off.
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NEWSLETTER

Corporate profits in the chemical industry hit unprecedented heights in the second quarter of 1955, and bid fair to continue their spectacular spiral in the third quarter.

That's the prediction of economic observers, churning about in a sea of figures this week.

Reason for the optimism is rooted in the sharp advances in consumer and business buying—the same factors that sparked the second-quarter surge.

Consumer buying is heavily backstopped today by the highest average personal income in history—an income rate that is still on upswing—and this the experts regard as a veritable "good business" talisman.

•

The booming economy seems to be having an encouraging effect on formation of new chemical companies, too.

According to a survey now being completed by the Commerce Dept., there are some 12,000 firms in the U. S. doing chemical and allied process business today—more than ever before recorded.

•

Prodded by the drive to wrap up its business and to go home by Aug. 6, Congress last week quickly cleared legislation permitting sale of the last of the government-owned synthetic rubber plants at Institute, W. Va.

The Office of Defense Mobilization now has 60 days to take bids, 75 days in which to negotiate terms.

•

Faring almost as well is the Senate-passed bill to extend and broaden the Water Pollution Act of 1948.

Despite premonitions that it would run into a number of snags in the preadjournment rush, it now looks as if the bill may manage to slip through before Congress closes up shop for the summer.

•

Determined to step into a contender's position in the polyethylene production race is W. R. Grace & Co. (New York).

Late last week the company completed final licensing arrangements with Phillips Petroleum Co. for use of the Phillips process, will now proceed to iron out construction details, plant location, etc.

Estimated investment: $18 million.

•

The St. Louis Ordnance Works (owned by the government but operated under contract by Olin Mathieson Chemical Corp.) is due for a building rehabilitation program that could run to $5-6 million. So admit Pentagon spokesmen this week.

But rather than being an attempt to broaden its production base, the funds spent at the St. Louis plant will serve to "debottleneck" current production facilities.

Listed for special consideration: erection of a lead styphnate and tetracene plant.

Latest to sign a contract with the Atomic Energy Commission to build a uranium ore processing plant is Rare Metals Corp. of America.

Site of the plant will be Tuba City, Ariz. (on Navajo Indian Territory); completion will bring to 12 the number of such processing mills in the western United States.

Rare Metals, an affiliate of El Paso Natural Gas Co. and Western Natural Gas Co., will build the plant with its own crews, expects to be in operation by next April.

•

Total synthesis of racemic aldosterone—the superhormone of the adrenal glands—was claimed by two Ciba scientists at the 14th International Congress of Pure and Applied Chemistry in Zurich last week.

Culminating 20 years of intensive research effort, the 30-step process is being hailed as a truly great chemical achievement. It gives promise of bringing to arthritics (and sufferers from Addison's disease) a far more potent remedy than cortisone or its relative—hydrocortisone (*CW, Sept. 18, '54, p. 46*).

•

A rundown on just what process and product patents have been ordered "made available" by defendants in antitrust cases is being prepared by the Justice Dept.'s Antitrust Division.

The list, when made public, will include names and addresses of all companies involved and, wherever possible, terms on which patent licenses, know-how, and technical assistance can be obtained.

•

First break in Florida's two-month-old phosphate strike: a compromise wage increase has brought a settlement between AFL Chemical Workers and Coronet Phosphate Co. at Plant City, but no letup in picketing at the plants of the six other companies concerned. Coronet's original offer—in line with the other firms'—was to raise wage rates by an average of about 4½¢/hour and the union's starting demand was 10½¢; settlement involves increases of 6 to 8¢, with another 4¢ boost to come next year.

•

Also on the chemical labor front: first definite word on the probable merger of AFL Chemical Workers and CIO's Oil, Chemical & Atomic Workers. Vice-President Elwood Swisher, of OCAW, says his group will "make overtures" next month after the ICWU convention, which is to be held Aug. 8-12 in St. Louis.

•

"Heliumized" offices—to enable the businessman to think more efficiently—may be just around the corner.

Latest invention of Rear Admiral Charles B. Momsen (of Momsen lung fame), breathing a helium-oxygen mixture is said to enable the average man to work 12 hours/day without fatigue, to permit him to do six hours work in four.

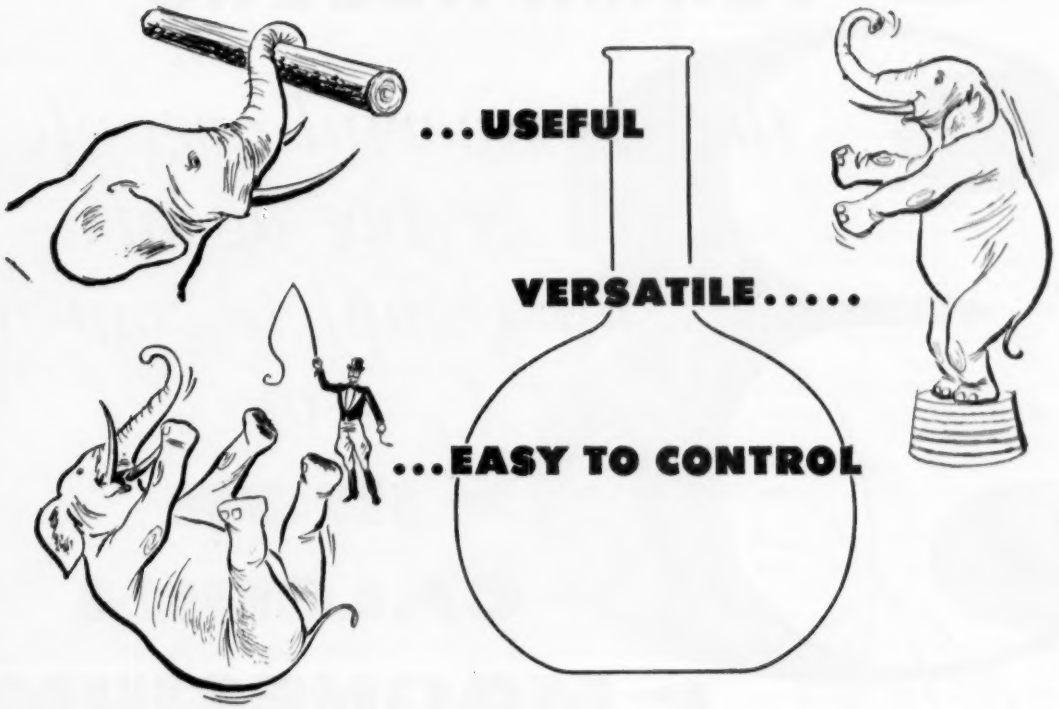
Big problem yet to be solved: how to reacclimate the helium breather to normal atmosphere without a jolt.

•

A novel use for hydroxypropyl methyl cellulose is claimed by two Dow Chemical Co. employees who have assigned patent rights to the Midland, Mich., firm.

Used in correct proportion, the foam preserver will maintain the head on beer 6 to 10 times longer than usual without affecting the color or taste of the brew.

SODIUM HYDRIDE



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California: SIDNEY SPRINGER, 311 S. San Pedro St., Los Angeles 13, California
New York: CARBIC - MOSS CORP., 451-453 Washington St., N. Y. 13, N. Y.
Canadian: RELIABLE CHEMICAL PRODUCTS CO., 85 Cannon St., W., Hamilton, Ontario
Central Eastern: ADVANCED PRODUCTS CORPORATION, New Hope, Pennsylvania

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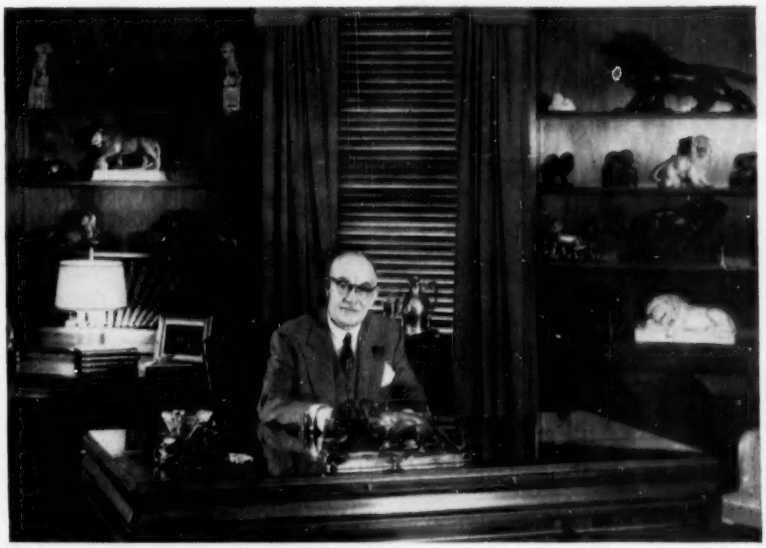
Midwestern (Detroit Area): R. A. WILLINGANZ, 205 East Ann St., Ann Arbor, Michigan
Southwestern: RELIANCE CHEMICALS CORP., 2437½ University Blvd., Houston 5, Texas
So. California: CHEMICAL-ADDITIVES CO., 3155 Leonis Boulevard, Vernon 58, California
No. California: WILLIAM C. LOUGHLIN & CO., 311 California St., San Francisco 4, Calif.
European: CHEMITALIA COLORI, Corso Venezia, N. 56, Milano, Italy

BUSINESS & INDUSTRY. . . .



BARTON: Driving spirit behind Lion's drive to make . . .

Oil Payoff into Chemicals

In what will undoubtedly go down as one of 1955's major merger moves, Monsanto Chemical Co. (St. Louis) and Lion Oil Co. (El Dorado, Ark.) last week posted marriage banns.

Basis of the proposed merger is exchange of 1½ shares of Monsanto $2 par common stock for each outstanding share of Lion; Lion will retain its corporate identity as Lion Oil Co. Div., Monsanto Chemical Co.

But the story behind the alliance is one sure to titillate the imagination of chemical men everywhere.

T. H. Barton, Lion board chairman, has long held that "chemical production is an essential phase of any oil company's business." Result of his thinking: a mounting investment of Lion assets in chemical facilities—until today approximately 40% of the company's annual sales ($98.6 million) are derived from chemical products. (The product list includes anhydrous ammonia, ammonium nitrate, nitric and sulfuric acid, ammonium sulfate, a complete line of petroleum-base protective coverings, and herbicides.)

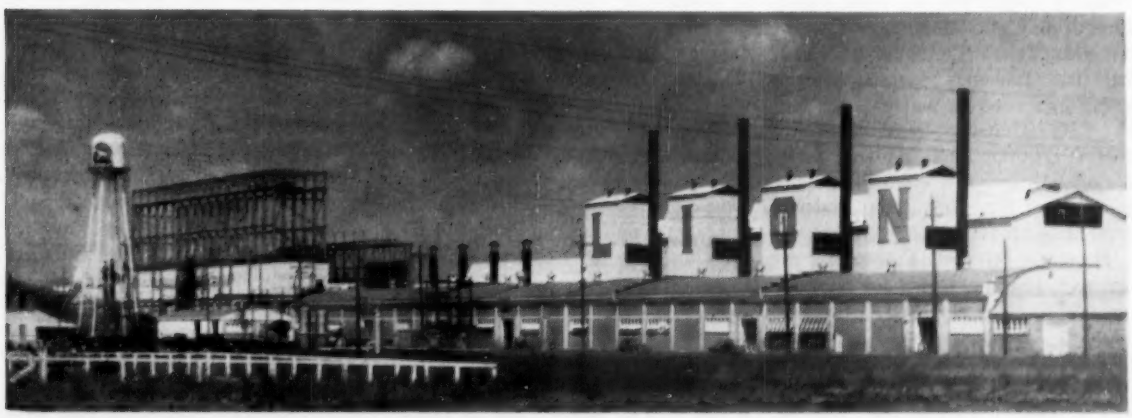
More important still (from Monsanto's point of view), Lion possesses a virtual chain of market outlets throughout the cotton belt—including 1,800 service station outlets in Arkansas, Mississippi, Tennessee, and Alabama.

And its raw material position has been gradually improved over the years until today oil capacity stands at 24,000 bbls./day.

Monsanto, on the other hand, has been bulwarking its Organic Chemicals Div. in recent months, is setting up necessary wholesale and retail distribution channels to extend marketing of its agricultural chemical formulations (including weed-killers, insecticides, and crop desiccants) to a 15-state Midwestern area.

Total assets of the two companies (when merged) will range upward of a half-billion dollars; sales at the end of 1955 should be running well ahead of $450 million.

From both parties' point of view it appears to be a fortuitous marriage—one that should pay off in the profits parade.



EL DORADO, ARK.: Where anhydrous ammonia production makes Lion a logical helpmeet.

WIDE WORLD

AFL'S STAHL: Though merger is still 4 months off, he'll work with CIO.

Premerger Collaboration

They're ganging up on management. That's the word on labor unions this week, with formerly rival unions agreeing to bargain in unison, even though the scheduled AFL-CIO merger is still more than four months away.*

And chemical process companies are to be among the first to face this new joint-action tactic on the part of organized labor.

No. 1 target: the big basic aluminum producers—Aluminum Co. of America, Kaiser Aluminum & Chemical, and Reynolds Metals. They're going into contract negotiations with the CIO's United Steel Workers and the AFL's Aluminum Workers International Union, two erstwhile enemy unions that have linked up under a kind of "mutual assistance" treaty.

Harmony Stressed: From their respective headquarters in Pittsburgh and St. Louis, Presidents David McDonald of the Steel Workers and Eddie Stahl of the Aluminum Workers declared that "cordial and harmonious" preliminary meetings of their officials "revealed in a tangible way the wisdom of joint bargaining action by our unions." Each union will name members to a joint bargaining committee that will exchange information, work out strategy recommendations.

Within the chemical unions themselves, there's a strong trend toward building up industrywide and companywide bargaining units (*CW, July 2, p. 17*) and geographical organizing units. Latest developments: The Oil, Chemical & Atomic Workers (CIO) set up an Atomic Energy Workers Council to work out mutual collective bargaining policies; and also put into working order its District 12 (Maryland, Delaware, southern New Jersey and eastern Pennsylvania) organization, headed by David Abrams at Philadelphia.

The International Chemical Workers Union (AFL) already has in operation several company wide councils.

* One of the last stumbling blocks in the way of AFL-CIO unity was carted away last week when officials of both groups agreed on a name for the merged organization. The new name is formed by simple addition: "American Federation of Labor and Congress of Industrial Organizations."

Matter of Interpretation

One answer to whether there is a U.S. shortage of engineers and scientists was given this week by the National Science Foundation.

Its finding: of the 200 companies that employ well over half of all the scientists in industrial research, one-third have substantial shortages, one-sixth have not-so-extensive lacks, and one-half report no shortages.

In the chemical and allied products field, about half of the 33 firms contacted claim shortages of some degree. However, only seven of them reported to interviewers that shortages are significantly impeding or retarding research and development programs.

Officials of most of the largest chemical manufacturers, the report continues, indicate that their current research activites are not affected by a lack of scientists and engineers. They stress, however, that intense recruitment programs were necessary to fill quotas.

Worth the Effort: Such recruitment, however, would seem to pay off. Reason: the portion of the chemical industry reporting substantial shortages is well below the over-all ratio of industry.

"Altogether," the report states, "interviews with company officials indicate a considerable disparity in the personnel situation even within individual industries"—excepting aircraft.

Since the interviews on which these findings were based are part of a larger, over-all survey of U.S. research, it is not possible to develop detailed reasons for such disparities. Such factors as differences in kinds of personnel needed (by specialty, and by level of training or experience), differences in salaries a company will offer, its personnel turnover rate, and whether its research program has been expanding rapidly undoubtedly condition a company's manpower problems. Also important: how the prospective employee judges a company's recruitment program, his opportunities for advancement and for long-term security.

Certain types of scientists are also particularly in demand today. Chemists with Ph.D. degrees in physical and organic chemistry are especially short, as are chemical engineers with over five years' experience.

HODGINS: Center of a controversy that is . . .

Erupting into Politics

Like an incipient boil, the plight of the businessman in Washington is going to get worse before it gets better.

Under fire from Democratic aspirants to office in 1956 as well as from the Justice Dept., industry representatives in government jobs seem fated—before the month is out—to be placed under fairly tight restrictions.

Political Overtones: Back of the Democratic attack on dollar-a-year (WOC—i.e., "without compensation") men in government offices is ostensibly the question of whether any man's business decisions and acts are influenced by his present (or past) connections.

But actually the target is bigger than that. Key political ringmasters see the WOC controversy as "good politics" for 1956. They are keeping scorecards on key businessmen President Eisenhower has brought into Washington, charting decisions each has been involved in, and what his actions have been.

Several key officials are already under open attack—including Air Secretary Talbott (for his continued association with a consulting firm), and two oil men, Hugh Stewart and W. W. White (criticized for continuing to receive pay from the Texas Co. and Esso Export Co.).

Moreover a number of chemical men (by dint of their offices) are being drawn into the picture, too. High on the list of "obvious" targets: Theodore Hodgins, head of the Chemical Division, Business & Defense Services Administration (on loan from Reichhold Chemicals), C. J. Bauer (on loan from Standard Oil Co., N. J.), Franz von Schilling Jr. (on leave from California Texas Oil Co.), and Lynn Madsen (on leave from Arabian American Oil Co.).*

Meanwhile the Justice Dept. is turning its sights on businessmen from a slightly different direction. Its Antitrust Division wants to find out whether their activities have fostered monopoly or been helpful to their private employers. At first, Justice will look only at government consultants who advise on contracts awarded under the Defense Production Act, but the study is certain to broaden into across-the-board investigation.

In such an atmosphere, companies may well be tempted to change their policy of encouraging executives to accept government posts.

"With the situation going from bad to worse," frankly admits one prominent chemical executive "we'd certainly think twice before suggesting that one of our key men accept a government post today."

* The latter three all serve in the Oil and Gas Division, Interior Dept.

Surcharge for Speed

Higher fees, faster service—that's what's in prospect this week for people who use the facilities of the U.S. Patent Office

A bill that would roughly double the fees presently charged has been approved by a Congressional committee after hearing testimony from many industrial and patent-law association spokesmen—who generally felt that the proposed increases were higher than necessary.

The committee, however, sided with the Patent Office, which contended that the higher fees would more accurately reflect the difference in costs of processing simple and complex patent applications. Under this bill, an applicant would pay a $40 filing fee plus $2 for each claim in excess of five, $2 for each page of specifications over 10, and $2 for each page of drawings beyond one. Final fee—paid when patent is issued—would be $50 plus $5 for each claim over five.

Along with these steeper charges, the committee—headed by Rep. Edwin Willis (D., La.)—is recommending a Patent Office budget that would permit hiring 300 additional examiners. This is part of the Patent Office's 11-year plan to cut down its backlog.

The Senate's Approval of a Two-Year Extension of the Defense Production Act Would . . .

- **Allow the President to continue to allocate scarce materials.**
- **Permit him to encourage production of metals and other critical items through purchases, loans and loan guarantees.**
- **Underwrite financing of research into substitutes for chemicals, drugs, and other materials—supplies of which would be limited or cut off in time of war.**
- **Allow businessmen serving without compensation in Defense agencies to continue in their posts, but limit them to an advisory capacity on policy decisions.**
- **Permit a two-year extension of antitrust exemption on current voluntary business agreements on foreign petroleum supplies and military tanker allocations.**

The House generally subscribes to these provisions, would, however, bar industry WOC's from any line job, would order current voluntary agreements terminated.

COMPANIES . . . .

An interest in Mid-South Chemical Corp. (Memphis, Tenn.) has been acquired by Continental Oil Co. and Cities Service Co.

Henceforth market product (anhydrous ammonia) will be obtained from Cit-Con Oil Corp.'s plant at Lake Charles, La.; the company's activities will be extended into the Midwest and South.

•

Upjohn Co. has paid $114,000 for a new plant site in Memphis, Tenn. A company spokesman says expansion planners intend to spend upwards of a million dollars in construction work on the site, starting sometime next year.

The United States Rubber Co. has arranged (privately) a long-term, $60 million loan at 3¾% for plant expansion and working capital. The company will take down $37.5 million initially, and $12.5 million on or before December 15, '56.

The remainder of the loan remains on option until July 15, '57.

•

Stepan Chemical Co. has acquired a 287-acre site on the Illinois waterway, near Joliet.

•

In Baton Rouge, La., a charter of incorporation has been issued to the Delta Mud & Chemical Co., Inc., listing 10,000 shares of common stock, no par value.

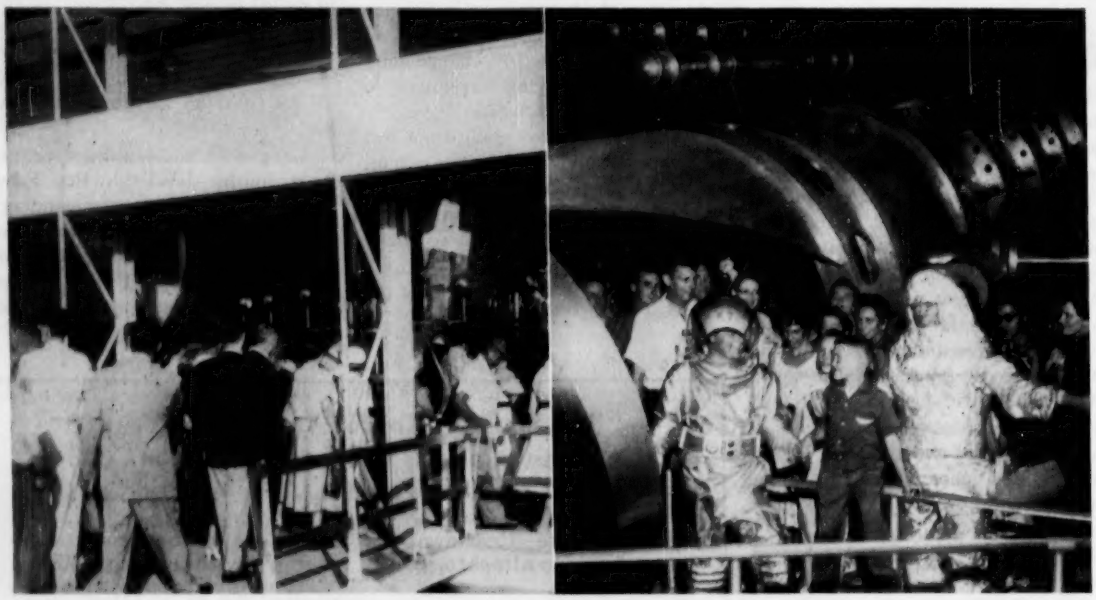
EXPANSION . . . .

Hydrogen Peroxide: Becco Division, Food Machinery & Chemical Corp., is expanding its hydrogen peroxide-producing facilities in Portland, Ore. at a cost of $1 million. Output, when the new units are in production, will be lifted some 50%.

•

Nylon: The Chemstrand Corp.'s nylon-producing capacity at Pensacola, Fla. will be increased to a total of 88 million lbs./year.

The plant, with an initial rated capacity of 50 million lbs./year, was authorized for an increase to 58 million lbs. last December. Production from this first increase will be available in 1956.



Orange Grove to Dreamland: A Place to Woo the Public

OUT IN THE HOLLYWOOD AREA, where the "spectacular" has to compete with the "colossal" and the "stupendous" for peoples' attention, a junior edition of a world's fair known as Disneyland is drawing up to 60,000 visitors/day; and five chemical process companies are part of the crowd-catching array. Disneyland —as most televiewers know—is a combination fairy wonderland, amusement park, and exposition devised by moviemaker Walt Disney. It consists of Main Street, a turn-of-the-century small-town business center; Frontierland, with log cabins and a river boat; Adventureland, where youngsters can explore man-made jungles; Fantasyland, with castles and pirates; and Tomorrowland, with spaceships and superhighways. Among industrial exhibits: Monsanto Chemical, which has a revolving stand with 8-ft.-high test tubes of chemical raw materials and smaller racks with 500 chemicals and plastics; Kaiser Aluminum & Chemical, with a 40-ft. "telescope" entrance and various human-shaped statues, all in aluminum; Richfield Oil, with an expressway system for miniature autos; National Lead, with giant mirrors that form a kind of walk-in color display; and Upjohn Co., whose real drug store is divided into 1890 and 1955 sections (*CW, April 9, p. 38*).

Carbide's ETHANOLAMINES

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Triethanolamine is a good emulsifying agent for cosmetic preparations. The detergent properties of this amine soap imparts a cleansing action to the cream, even when the soap is present in comparatively low concentrations.

Monoethanolamine and diethanolamine also enter into condensation reactions with fatty acids to yield an important class of textile assistants and synthetic detergents.

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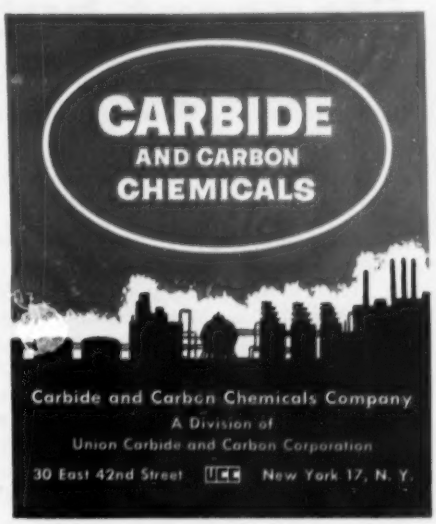

Is There a

Number of Chemical Stockholders Continues to Climb

	1954	1953	% Gain or Loss
Du Pont	155,981	152,692	+2.2
Union Carbide	110,421	109,551	+0.8
Eastman Kodak	86,180	85,481	+0.8
Dow	51,897	49,327	+5.2
American Cyanamid	41,350	36,800	+12.4
Celanese	39,111	40,505	−3.2
Texas Gulf Sulphur	38,288	38,201	+0.2
Olin Mathieson	38,000	35,000	+8.5
Allied	28,800	28,600	+0.7
Monsanto	24,243	24,434	−0.8
Air Reduction	23,630	23,493	+0.6
Commercial Solvents	19,862	20,171	−1.5
American Viscose	19,720	18,863	+4.5
Food Machinery	16,287	15,982	+1.9
W. R. Grace	14,114	10,288	+37.2
Koppers	13,878	13,423	+3.4
Freeport Sulphur	12,457	12,534	−0.6
Hercules	11,433	11,566	−1.1
Int. Minerals	11,216	10,352	+8.3

Pleasant but Perplexing

Individualistic U.S. investors are continuing to boost their purchases of chemical common shares.

Reasons are numerous; but the fact that there are more stockholders poses a nettlesome public relations problem.

Unlike the old adage—the more the merrier—the rapidly increasing number of individual common-stock holders in chemical firms today is causing more than a little worry. In some industries, institutional accumulation of common stock is whittling down the number of stockholders—causing a growing separation between beneficial ownership and voting control.

But in the chemical industry, with few exceptions, the single most pressing problem today in stockholder relationships is how to achieve a close company-owner kinship in the shortest possible time.

Reason for officials' concern is obvious:

- Recent executive rhubarbs culminating in proxy battles emphasize the importance of the individual stockholder vote.
- In the event of a slumping off in stock prices, management is well aware that stockholders with firm confidence in their company's potential make far healthier owners.

How to Do It? The big question is, How can the average company get its story across with the greatest impact—and at the least cost in time and effort?

Surveyed by *CW* last week, most firms differ as to what method they think is most effective, agree, however, that a company must try a series of approaches . . . "finding a combination that works."

Annual meetings, for example, are

a Limit?

. . . As Prices Soar to All-Time Highs

1955 High	1955 Low	Latest Interim or Earnings First Quarter	1954 or Latest Fiscal Year Earnings
249¾	157	2.00	7.33
102¾	80⅜	.98	3.10
82¾	67	.84	3.99
58⅞	43⅛	1.17	1.42
63	48	1.02	2.95
26¼	20⅝	.47	.32
44⅞	38	.88	3.05
64⅞	49⅜	.71	3.41
122¾	93	1.29	4.80
156½	98	1.02	4.39
37½	27⅝	.68	1.86
26¾	19½	.31	1.01
66	38⅝	1.39	2.31
56½	46¾	1.01	3.80
54¾	41⅝	....	3.50
54¾	38¼	2.29	2.77
88½	68	1.01	4.20
126¼	96	1.54	5.10
41½	33⅛	1.76	2.44

highly rated as "a prime opportunity for management to get close to stockholders," But they don't occur often enough to enable executives to get to new stock owners, are sometimes held in inaccessible locations where the great bulk of individual holders cannot attend.

That means that company officials must try to put "sell" in their annual reports, follow up with periodic brochures or even company histories to get their message over.

Personal Touch: The personal touch is receiving support in many quarters.

Assignment of corporate executives to regular speaking engagements (before security analysts' meetings, Chamber of Commerce gatherings, etc.) is regarded by many firms as a "necessary stockholder insurance" matter today.

Others put top confidence in selling key "names in the company" to the public at large—feeling that pride in a man's accomplishment will personalize the firm to the stockholder, make him more conscious of the type of individual who runs "his" company.

Plant tours—long regarded in industry as a burden to be endured only when necessary—are today considered by a number of top companies as an "essential" of a good stockholder relations program.

"To make sure that no stockholder is ever made to feel his presence is unwanted, we've even gone to the extreme of calling all our plant managers into the picture," admits one vice-president. "They know that we here at the home office believe that part of their responsibility—as company representatives—is to sell the firm to stockholders and potential investors. It's a function, the value of which is impossible to calculate, but one we rate as essential."

"Every company executive today must be aware of the difficulty of stockholder relations," asserts one Midwest company president. "It's no longer a question of waiting until fire breaks out, then calling for the fire department. The stakes are too great."

"Time and thought spent in finding a means to span the breach between company and stockholder is time well spent," agrees another. "It's a problem, perplexing to solve, but one which any company must accept as a penalty of success."

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WIDE WORLD

Strike Season, U.S.A.

A SUMMER simmering with strikes is the way this season will be remembered by industrial relations specialists in various parts of the chemical process industries. After hitting a postwar low last year (*CW, June 25, p. 32*), chemical strikes are up this year both in incidence and in intensity. Examples of current long-duration strikes in which feelings are tense:

• At Sheboygan, Wis., United Auto Workers (CIO) turned out in motor boats and at Sheboygan's Lake Michigan harbor (*above*) to prevent unloading of 1,700 long tons of ceramic clay from England destined for the Kohler Co., makers of plumbing fixtures and plant equipment. The 15-month strike has led to proceedings before the National Labor Relations Board. Recent unofficial conciliation attempts by a Congressional committee and the mayor of Sheboygan failed.

• At Gramercy, La., members of Local 1167, United Packing House Workers (CIO) and their local president, Arthur Arcenaux (*below*), are under court orders to refrain from picketing and violence at the sugar refineries of Colonial Sugars Co. and Godchaux Sugars, Inc. Their three-month strike follows 10 months of wage negotiations.

WIDE WORLD

A very important page for your Chemical Data Book!

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Ethylene Glycol—For use as a nonvolatile antifreeze; a heat transfer medium; a raw material in the manufacture of low-freezing dynamite; a starting material for the production of synthetic fibers and alkyd resins; a plasticizer; a constituent of hydraulic fluids; and a general solvent and chemical intermediate.

Ethylene Dichloride—For use as an ingredient of tetraethyl lead fluid, a fruit degreening compound and agricultural fumigant; a solvent for fats, oils and waxes; a metal degreaser; a spotting agent for textile cleaning; a chemical intermediate for use in resin manufacture and in other processes.

Diethylene Glycol—For use as a dehydrating agent for natural gas; a moistening agent for tobacco, glue and gelatin; a textile lubricant and coupling agent; a solvent in textile dyeing and printing; a constituent of hydraulic fluids; a heat transfer medium.

Monoethanolamine—For use as a gas scrubbing agent for recovery of hydrogen sulfide and carbon dioxide; a chemical intermediate in the manufacture of various surface active agents, rubber chemicals and other materials; a vehicle in the manufacture of antibiotics.

Diethanolamine—For use as an intermediate in the manufacture of surface active agents used in textile specialties, herbicides, petroleum demulsifiers, etc.; as a gas scrubber in refinery operations; as a rubber chemicals intermediate.

Triethanolamine—For use as an intermediate in the manufacture of surface active agents used in textile specialties, waxes and polishes, herbicides, petroleum demulsifiers, cosmetic preparations, cement additives, cutting oils, etc.; as a rubber chemicals intermediate.

Nonyl Phenol—For use as an anionic and nonionic surface active agent intermediate; as a starting material for the manufacture of lubricating oil additives, stabilizers, petroleum demulsifiers, oil-soluble phenolic resins and plasticizers.

Morpholine—For use in the manufacture of surface active agents, rubless waxes and polishes, rubber curing agents, corrosion inhibitors, antioxidants, catalysts, plasticizers, dyes, agricultural chemicals, separating agents, bactericides, pharmaceutical chemicals and textile lubricants.

Ethylene Carbonate—For use as a solvent for acrylonitrile polymers, lignin, nitrocellulose, nylon, vinylidene chloride-acrylonitrile copolymer, cellulose acetate and other polymeric materials; in the preparation of agricultural chemicals, resins, fungicides, pharmaceuticals and plasticizers.

Propylene Carbonate—For use in hydraulic fluids; as a solvent for cellulose resins, bisphenol resins and other polymeric materials; and as an intermediate in the preparation of agricultural chemicals, resins, fungicides, pharmaceuticals and plasticizers.

Glycerine Carbonate—For use as an intermediate in the production of glycidol; as a solvent for cellulose acetate, nylon, nitrocellulose and polyacrylonitrile; and as an extractive solvent in certain aliphatic and aromatic hydrocarbon separations. Available in trial lot quantities.

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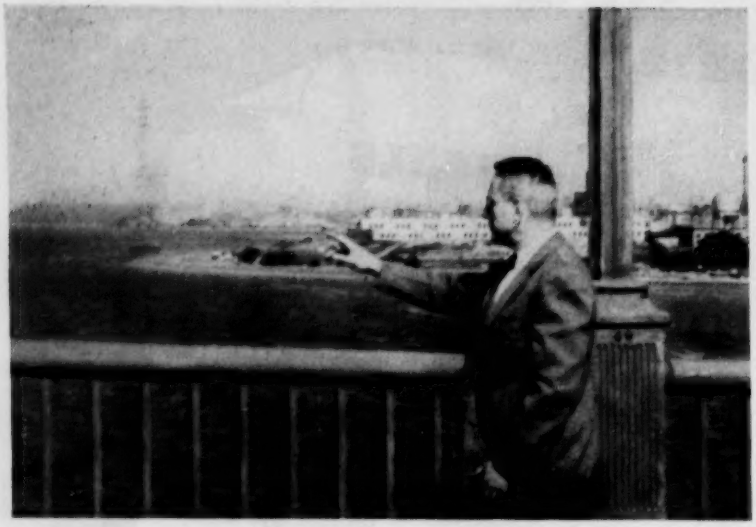

ALIGNED AGAINST POLLUTION: Along Niagara River, state and local officials* team up with U.S., Canada and chemical process plants in a . . .

Five-way Drive on Grime

Local, state, federal and international agencies are joining forces in a concerted move to stamp out pollution in the Niagara River between New York and Ontario.

To a great extent, they're counting on industry—and particularly the chemical process plants on the U.S. side—to carry the brunt of the attack, laying out sizable sums for research and construction costs.

Sweeter honeymoons are in prospect for newlyweds on the traditional trip to Niagara Falls, with a five-pronged drive just starting up to curb pollution in the Niagara River; and sponsors of the campaign are banking heavily on voluntary efforts of the companies whose chemical, electro-chemical and electro-metallurgical plants stud the U.S. shoreline.

The New York State Water Pollution Control Board—an agency of the State Health Department — has launched the campaign by assigning to the 34-mile stream an "A Special" classification that calls for high standards of water purity and quality.

This means that industrial effluents and other wastes discharged into the river are to be treated before discharge so as not to impair the stream's usefulness for domestic and industrial water supply, navigation, fish and wild life, swimming, irrigation, and other riparian activities. For cities and industries, that treatment will require large outlays for equipment; in some cases, research may be needed to find either economical treatment methods or new production processes that will reduce contamination.

Not Too Sudden: Officials of the agencies concerned are emphasizing that they mean business; but they also make it clear that they don't expect the Niagara River to be transformed overnight to a clean, crystal-clear stream.

Their abatement program is basically a long-range one, with particular stress being laid on cooperation from industry, cities and towns, and the general public. Legal steps to enforce regulations can be taken as a last resort, but only after hearings and expiration of time limits as may be set by the board.

Though the main points of the program are now well known, details won't be known until the board issues its formal plan—expected any day now. This will be based on suggestions from industrial and municipal officials, as well as engineering recommendations and the general clean-stream objectives that have U.S.-Canadian sanction. Copies of the preliminary draft have been sent to plant managers and mayors inviting them to propose changes, and their replies now are being considered.

On All Levels: While a New York state agency will direct the campaign, it will be actively supported by local, federal and international units. Local interest—especially from sportsmen and conservationists—is channeled through the Citizens Committee for a Clean Niagara River, headed by John Beyer, Sr., of Tonawanda, N.Y. This group played a key role in the fight to have the river placed in the "A" category.

The international angle is covered by a 46-year-old U.S.-Canadian treaty that set up the International Joint Commission "to prevent disputes regarding the use of the boundary waters" between the two countries. Under Article IV of the treaty, it's agreed that the boundary waters shall not be polluted on either side to the injury of health or property on the other side. The IJC—whose headquarters are in Washington, D.C.—has promised to send representatives to Buffalo and Niagara Falls this summer to carry on both educational and correctional work. IJC Executive Sec-

* Such as Associate District Engineer Donald Stevens (left) of the New York State Water Pollution Control Board and John Beyer, Sr. (right), chairman of the Citizens Committee for a Clean Niagara River.

retary Jesse Ellis said his men will check on sources of pollution, advise industrial and municipal offenders that practices causing contamination must be discontinued.

Further help may be forthcoming from the Water Pollution Control Advisory Board of the U.S. Public Health Service and city, town and county governments.

Cooperation Predicted: Some 32 major industrial plants on the Niagara Frontier are listed as having "significant" liquid wastes—including phenol, cyanides, suspended solids, and grease and oils.

That all these firms will be willing to cooperate is indicated by an executive of a large electro-chemical company, who told CW: "We see nothing wrong with the program. It gives us plenty of time to comply; and if the preliminary report reflects the public attitude, we feel industry has been treated very leniently. Admittedly, we in industry have a lot to do in the program, and we will do it."

Further evidence: The board's letters inviting comments on the preliminary draft also asked that each company and municipality pledge its cooperation; and reportedly, every one signed that pledge. The spirit, it appears, is quite willing; but for some companies, the cost may be plenty steep.

City Cashing In

City fathers in Dayton, O., are deeply embroiled this week in a plan calculated not only to save taxpayers' money but designed to solve a thorny disposal problem.

Through construction of a $900,000 recovery plant, to recover lime from sludge in the city's water filtration and softening plant, Dayton will be able not only to produce enough lime to satisfy its water softening requirements, but also will produce enough surplus to sell to other consumers in the immediate area.

Last year Dayton paid $315,000 for 20,440 tons of lime for water softening; the new plant will turn out that amount for $194,540.

That means a net saving of $155,920 the first year the plant is in operation, promises that the plant will pay for itself within five years' time.

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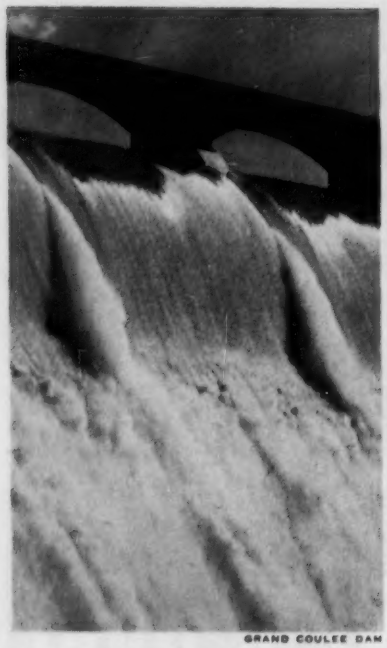

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HOECHST UNITS: Engaged in "friendly cooperation."

FOREIGN. . . . . .

Friends, Not Subsidiaries: Directors at Farbwerke Hoechst's annual meeting at Frankfurt last week averred once again that they do not expect "reconcentration of the former IG Farben successor companies" to eventuate—at least for the next few years.

It will be necessary, however, "for the companies to work on a basis of friendly cooperation to avoid useless double investments."

Example of what form this "friendly cooperation" may be expected to take in overseas business: Farbenfabriken Bayer and Farbwerke Hoechst have just concluded an agreement with the Pakistan Industrial Development Corp. to establish a dyestuffs plant at Kakistan.

The Development Corp. will supply 70% of the 40 million rupees needed to build the plant; the remaining 30% will be contributed jointly by the German companies. Bayer and Hoechst further promise to pool their technical knowledge to render scientific assistance to the plant for the next 10 years.

•

Synthetic Rubber/India: There's every indication in Bombay this week that the Indian government will soon sanction construction of a $630,000 plant to produce synthetic rubber from the waste products of the Stanvac and Burmah Shell refineries on Trombay Island.

Industry estimate: the proposed plant will turn out 15,000 tons/year of synthetic rubber in its initial production stages.

•

Ammonia/Great Britain: Imperial Chemical Industries Ltd. is planning to build a new ammonia-from-oil plant at Billingham in County Durham, England. Due for completion within "a few years' time," the plant will yield by-product argon—used in the manufacture of titanium.

•

Glass/South Korea: Work is progressing this week on a flat-glass plant (designed to produce 6,000 tons/year of window glass) at Inchon, Korea.

To finance construction work, the United Nations Korean Reconstruction Agency has supplied $2.1 million; the Korean government has pledged $1.5 million for local labor and building costs.

U.S. engineers are on the spot supervising construction; completion is scheduled for late '56.

•

Sugar/India: The exploitation of bagasse through hydrochloric acid hydrolysis, which is said to double the amount of edible sugar from sugar cane, is claimed by the National Chemical Laboratory in Poona, India.

Successful large-scale application of the process (which involves use of cold, concentrated hydrochloric acid) would be of considerable benefit to Indian industrialists. Reason: India's sugar factories are left with 4½ million tons of bagasse each year, while only producing 1½ million tons of sugar cane.

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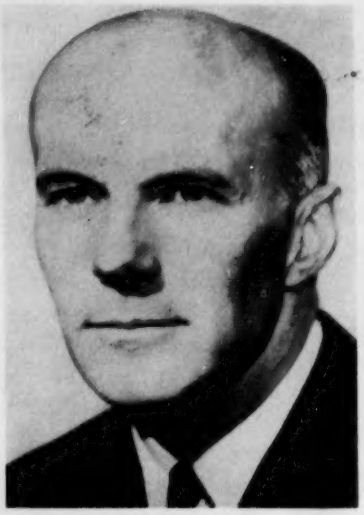

NAM'S SLIGH: On GAW, he foresees court ban or ever bigger levies.

LABOR . . . . . .

Weighed, Found Wanting: The guaranteed annual wage—either in pure or modified form—has been weighed in the balance and denounced as a bad bargain by a National Assn. of Manufacturers workshop in New York. Extension of the layoff payment plan adopted last month by Ford and General Motors in pacts with the United Auto Workers (CIO) would undermine free enterprise and push the nation toward "economic stagnation," speakers declared.

Michigan's Charles Sligh—chairman of the NAM executive committee—predicted that legality of the Ford and GM plans will be tested soon in state courts. He warned that if the GAW trend is not checked at once, the Auto Workers and other unions will keep pressing for higher employer levies until they attain their original goal of a full year's pay for employees who are laid off that long.

To help industrialists combat GAW demands by labor unions, NAM is offering a booklet entitled "Toward Steadier Work and Pay." It lists 100 ideas that may eliminate "sharp peaks and valleys of employment that have traditionally been considered normal in business operations." This is hailed by CIO as an admission that layoffs are not the fault of the worker, or due to his "sloth or union membership."

•

For Fatter Fringes: More and more often, heavy emphasis is being laid on fringe benefits in current contract negotiations. Recent examples:

- Effective Aug. 1, the new five-year contract between U.S. Rubber Co. and the United Rubber Workers (CIO) calls for increased pension payments, greater life insurance coverage, and a broader medical plan.
- The Oil, Chemical & Atomic Workers (CIO) and Sinclair Oil have agreed on new pension and insurance plans following their recent signing on a 10¢/hour wage increase.
- OCAW and Goodrich-Gulf Chemicals at Port Neches, Tex., have reached tentative agreement on a new sickness-accident benefit plan. Previously, they were in dispute as to whether the plan should be as generous as the one at Gulf Oil's Port Arthur refinery or should merely compare favorably with similar plans in the same locality.
- At Adams, Mass., Shea Chemical and District 50, United Mine Workers, have a new contract providing for the employer to pay the entire costs of insurance and hospitalization plans, and for employees in the acid plant to receive free medical and dental examinations.
- Purex Corp., Los Angeles, and the International Chemical Workers Union (AFL) have added several company-paid benefits to the existing health and welfare plan. New accident benefits—plus workmen's compensation and sick-leave—could amount to seven weeks' full pay.

Green Light in Chicago

After a series of quick signal switches last week, Mayor Daley of Chicago gave a green light to fluoridation of the city's water supplies. Finance committee, authorities and the city's purchasing agent have been authorized to proceed immediately with contracts totaling $150,000 for an initial supply of 5,000 tons of fluorides.*

According to best estimates, fluoridation will cost about $518,000/year including amortization of new construction over a five-year period; per capita cost will be 12.5¢ per year.

The program will affect 51 suburbs that buy Lake Michigan water from Chicago; total population reached: 4.3 million persons.

* Contracts went to International Minerals & Chemical, and Davison Chemical Division, W. R. Grace.

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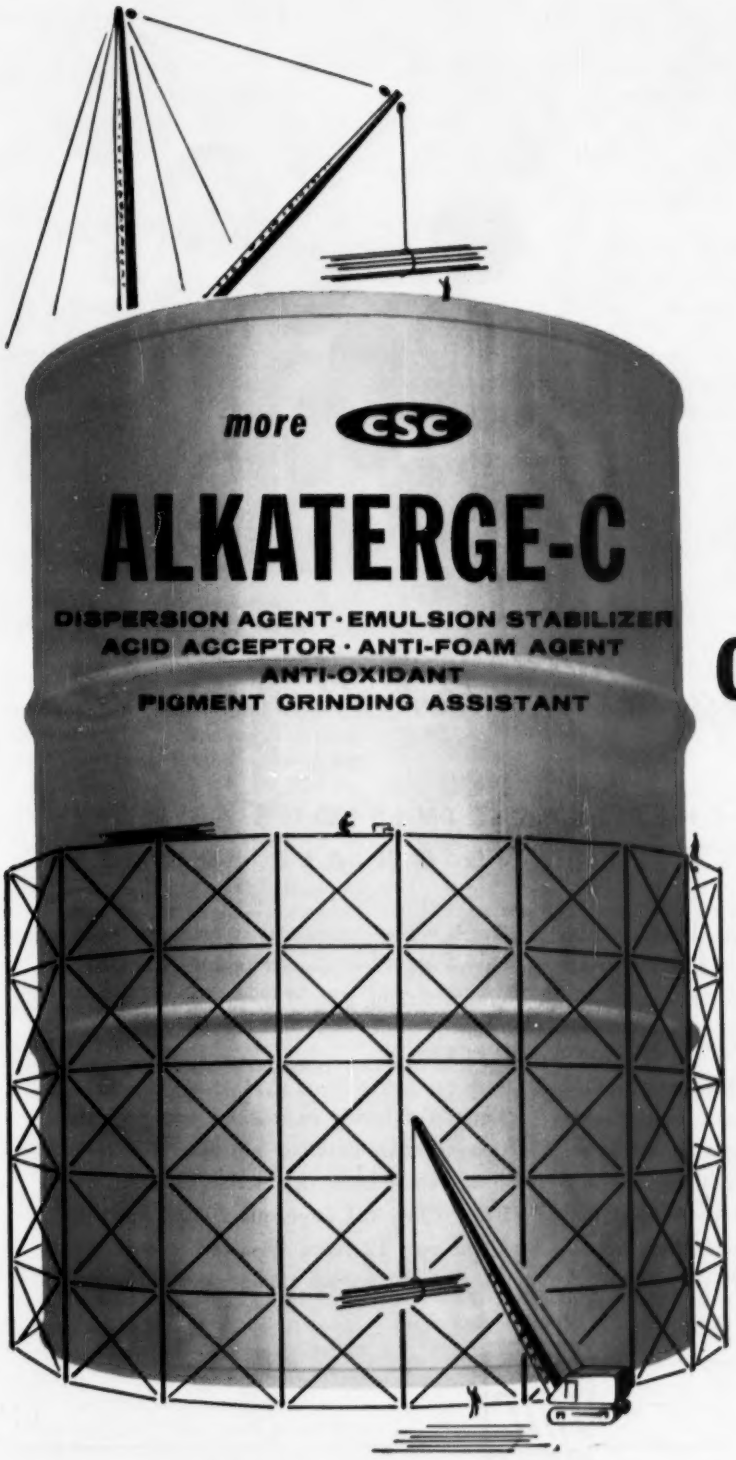

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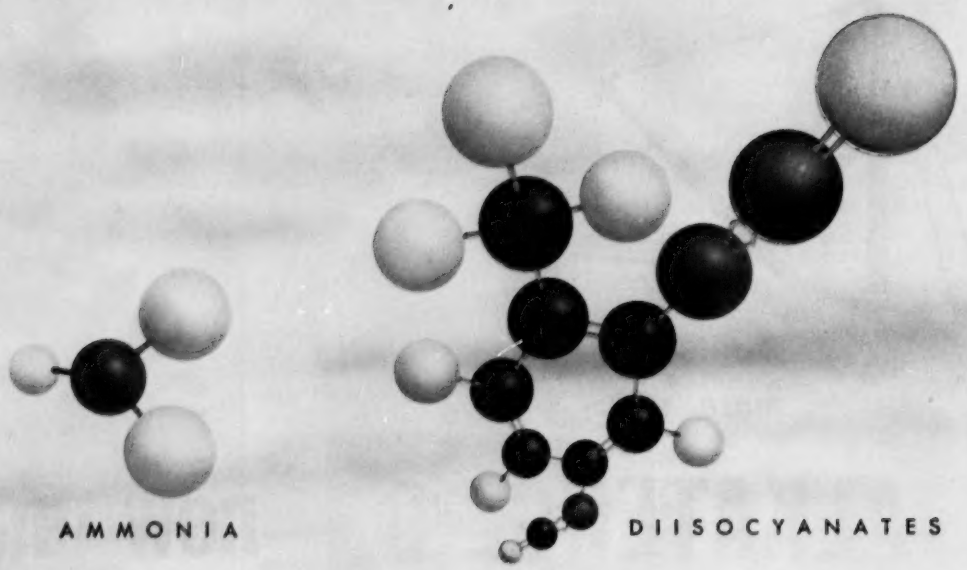

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DR. QUEBEDEAUX: For plants at Houston, summons on pollution.

LEGAL. . . . . .

Pollution Lawsuits: Increasingly strict enforcement of antipollution regulations appears to be the order of the day in Houston and vicinity. In the latest move, Dr. W. A. Quebedeaux, Jr., of the Harris County Health Unit has filed charges against three chemical process plants in the Baytown area: Humble Oil's refinery, General Tire & Rubber, and Humble's synthetic rubber plant. Quebedeaux—director of the health unit's stream and air pollution control section—alleges that the managers of those plants were responsible for dumping of various waste materials "harmful to fish and other aquatic life" in the Houston Ship Channel. Earlier, he had brought charges against a maker of mercaptans.

•

One Closing, One Opening: Trademark litigation continues to boil this week, with one old case being decided and a new case being filed.

• At Los Angeles, Rohm & Haas has won its suit against Plexolite Corp. of Calif. The court ruled that use of the name Plexolite for polyester sheets constituted infringement of the Rohm & Haas trademark Plexiglas, ordered the defendant to stop using the name Plexolite.

• At New York, two manufacturers of breath deodorants are going to let the U.S. District Court decide their tradename dispute. The Rilling-Dermetics Co., maker of OraMist, brought the suit against Bryant Pharmaceutical, producer of Oro-Spray. In rebuttal, Bryant tells *CW* that it believes it was on the market first, and that in any event the labels are dissimilar.

•

Death Settlement: A surrogate's court at Buffalo, N.Y., has approved a $72,500 settlement in connection with a death blamed on a chemical plant explosion. The victim had been working in the Novadel-Agene Corp.'s Lucidol Division plant at Tonawanda, N.Y., as an employee of a heating and air conditioning contractor, when the plant was badly damaged by an explosion in September '53.

KEY CHANGES. . .

Elwood I. Lentz, to general manager, Western Phosphates, Inc. (Garfield, Utah).

George Selbie Gordon, to director, research, United States Potash Co. (New York).

William Lee Sims II, to president, and **Ralph A. Hart,** to vice-president, Colgate-Palmolive Co. (Jersey City, N.J.).

H. Gordon Smith, to board vice-chairman, and executive committee chairman, U.S. Rubber Co. (New York).

S. B. Scott, to director, sales, Michigan Alkali Division, Wyandotte Chemicals Corp. (Wyandotte, Mich.).

Walter E. Brewer, to manager, Textile Chemicals Division, Nopco Chemical Co. (Harrison, N.J.).

Samuel D. Morgan, to manager, sales, Goodrich-Gulf Chemicals Inc. (Cleveland, O.).

William K. Whiteford, to director, and **C. K. McCracken,** to comptroller, Procter & Gamble (Cincinnati, O.).

Michael J. Erchak, to technical director, Semet-Solvay Petrochemical Division, Allied Chemical & Dye Corp. (New York).

KUDOS . . . . . .

Raymond Stevens, senior vice-president, Arthur D. Little, Inc. (Cambridge, Mass.), the Honorary Chairmanship of the American Section, 1955-56, Society of Chemical Industry.

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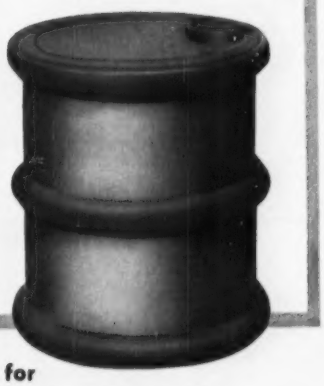

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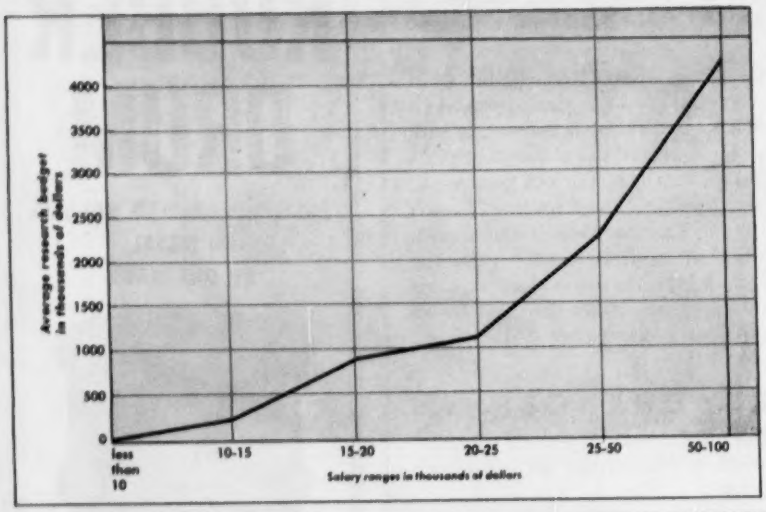
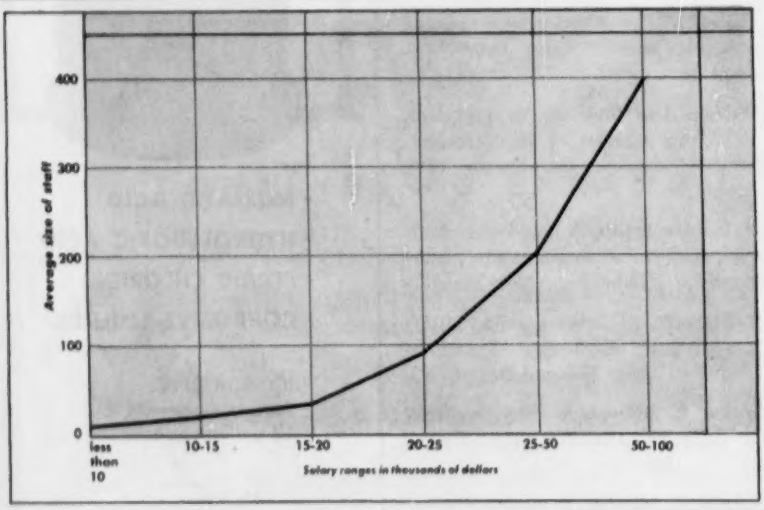
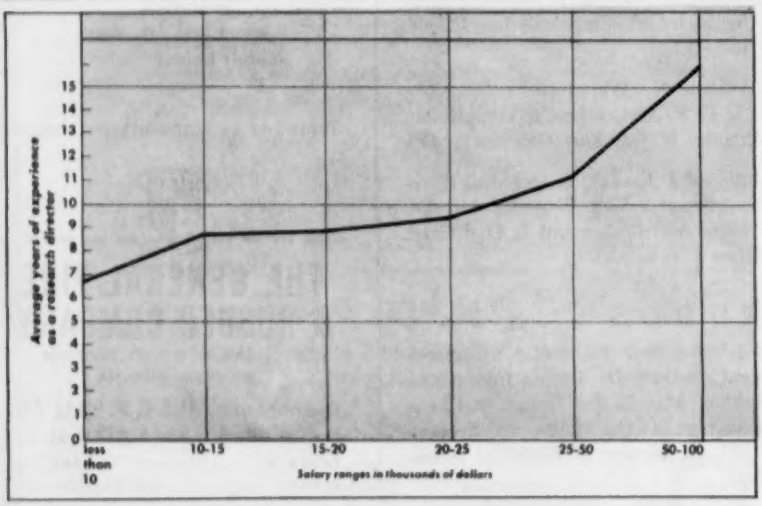
How Does Your Salary Compare?







If you're a research director, the charts at the left will hold more than casual interest for you. They allow you to compare your salary with the salaries of several hundred other research executives who participated in the latest **CW** survey* of earnings.

There is no meaningful "average research director"—because of the broad and highly diversified nature of the industry—but the data do succeed in sketching the principal features of men at various levels of the salary hierarchy.

These observations stand out:

• A research director stands the best chance of making $15,000/year or more if he has an operating budget in excess of $1 million/year.

None of the 20% of all directors reporting salaries of less than $10,000/year have budgets even approaching this size. Million-dollar-or-more budgets first appear in the $10-15,000 salary class (which accounted for 38% of all directors), become common in the $20-25,000 salary group (11% of the directors).

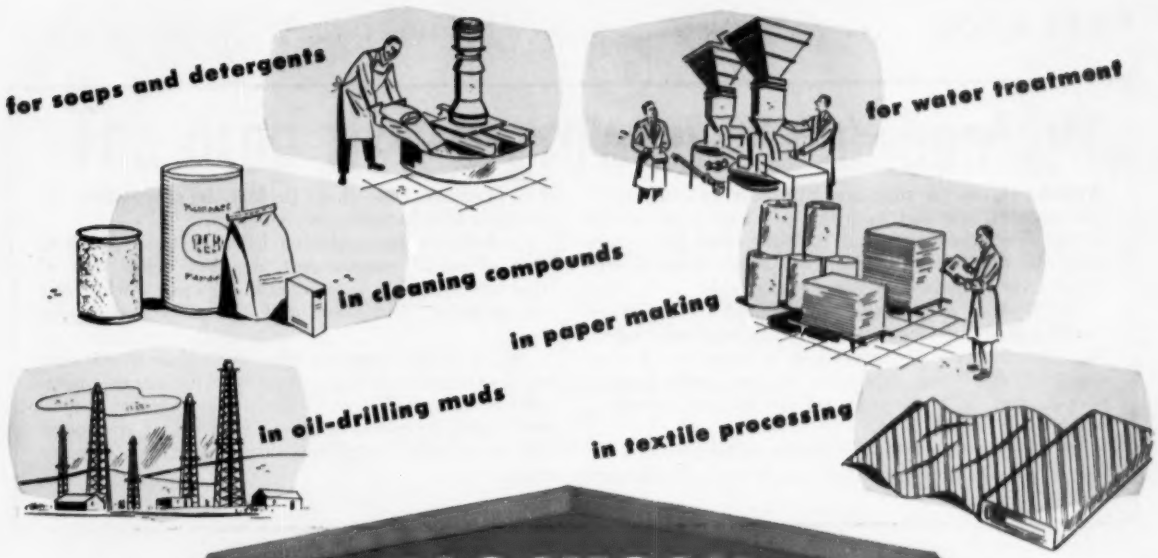
Seventy-three percent of individuals making $25-50,000/year (12% of all replies) command budgets of $1 million or more, as do all the $50-100,000/year men (2% of the total).

• Similarly, one hundred technically trained staffers is the key to more than $20,000. Not one of those making less than $10,000/year, and only one each in the $10-15,000 and the $15-20,000 classes (17% were in this bracket) supervise a hundred or more staffers. In comparison, more than half of the $25-50,000 group have staffs of more than a hundred, and only one $50-100,000 research director reports a crew of less than a hundred.

Time Tells: All the $50-100,000 group report 15 or more years' experience as research directors. As expected, fewest such veterans are in the less-than-$10,000/year bracket—although even here they comprise 19% of the total. At least 30% of all other salary grades are 15-year men.

(One respondent of less than three

*Which asked for anonymous information on research directors' highest academic degree; years of experience as a research director; salary, budget, and staff for the current fiscal year; and an opinion on his income status.



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- Trisodium Phosphate, Monohydrate
- Disodium Phosphate, Anyhdrous
- Disodium Phosphate, Crystalline
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'Mr. Average': A Statistical Personality

Averages, as a measure of individual financial achievement, are apt to mean precious little in the highly diversified chemical industry. But it's a rare man who can resist the urge to compare himself with the average—where an average is available.

For what it may be worth, the statistical average research director—determined from data gathered in this nationwide *CW* survey—is a man who makes about $17,000/year, supervises 56 technically trained people, and is responsible for an annual operating budget of $764,000.

He has had his most advanced academic degree for nearly 20 years—and is likely to have had considerable graduate education. In fact, he's probably the possessor of a doctorate in chemistry.

He feels his remuneration is about on a par with other chemical management men but below that of other professionals (e.g., doctors, lawyers) who have had no more (and often less) education and experience.

"Mr. Average" research director has had nearly nine years' experience in his current or a comparable management post. Although he feels that he earns a very good living, he makes clear his belief (right or wrong) that he is still a long way from his ultimate salary ceiling.

years' experience as a research director reports a salary in the $20-25,000/year range.)

Matter of Degree: Half of those reporting are Ph.D.s or the equivalent; 20% have master's degrees; 29% hold bachelor's; and 1% have no degree.

All the $50-100,000/year men hold doctorates, as do nearly 80% of the $25-50,000/year bracket. In the largest salary group ($10-15,000/year), 44% are Ph.D.s, 35% are bachelors, and 21% have master's degrees. In the less-than-$10,000/year category, however, only 29% have Ph.D.s, 29% have master's and 42% hold bachelor's. The few research directors having no degree are found at both ends of the salary scale.

One interesting discovery is that master's degree owners are not much better paid than bachelors. One-third of those in each degree group make less than $10,000/year; most of the remainder earn $10-15,000/year. Only 11% of the Ph.D.s, on the other hand, make less than $10,000/year; while nearly half report annual incomes of $15,000 or more.

Nearly a third of the Ph.D.s, moreover, control budgets of $1 million or more. About one in ten also has charge of 100 or more technical personnel. In comparison, only 5% of master's and 7% of bachelor's degree holders control corresponding budgets and staffs.

Matter of Opinion: Most replying B.S. degree holders believe their salaries are average or below average compared to (1) their research director colleagues in the industry or (2) other professionals. Only a sprinkling think their compensation is superior on one count or the other.

Suprisingly, masters (who do not earn appreciably more) are less disgruntled about their pay status in the industry; but more than half think their rewards are less than those given to men of comparable experience in other professions.

Most extreme are the Ph.D.s' comments, which list comparatively few "average" notations, abound with "superior" or "below average" in both categories; a slight majority state "below average" on both counts.

These estimates are purely subjective and may be based on more than is immediately obvious. A $10-15,000/year man who considers his income superior points out that salary, in his case, does not tell the whole story; his company, for instance, awards researchers a bonus of 5% of net sales for new products and product improvements.

Most research directors canvassed by *CW* are not unhappy about their salaries. But agreement on this score is by no means universal. "Many chemical concerns," avers one old-timer, "are at least five years behind the times in the salaries they pay chemists and chemical engineers. Such salaries are often less than wages for skilled and unskilled labor. I would not advise any young man to study either chemistry or chemical engineering."

What is perhaps a more constructive comment comes from a colleague who maintains: "The entire salary structure in research should be raised —to give research management salaries that are more commensurate with their contributions . . . to make research more attractive to young people in search of a career."

Breeding Paper

The paper industry is trying to make a better tree as one part of new research aimed at raw-materials improvement.

A corollary effort is the search for economical ways to upgrade the cellulose molecule.

To further the first objective, the Institute of Paper Chemistry (Appleton, Wis.) has hired a geneticist and an assistant, allocated funds to support their studies. Their task: to discover whether genetics can be used to control the yield and composition of wood fibers for pulping.

It's known that plant varieties containing extra sets of genes (polyploids) differ markedly from normal diploid forms. One Swedish aspen (probably a triploid), for example, is substantially larger than other aspens, gives appreciably more fibers per acre of woodland.

The geneticists will work with natural polyploids such as this, also try to produce new families of artificial polyploids. Colchicine, high temperatures and possibly radiation are able to convert diploids to polyploids. Researchers will soon try to determine whether such artificial forms can reproduce in the forest.

Genes that control important pulping characteristics (density, penetrability, cellulose content, resistance to disease, etc.) will also come in for investigation. If the work is successful, pulpers will eventually see hardwood

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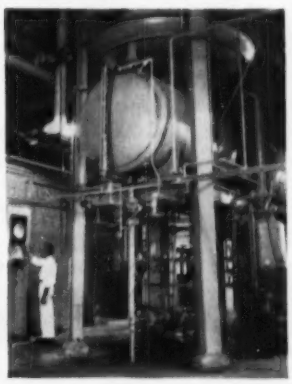

Three Girdler Deodorizers are installed at the new Jacksonville, Illinois, plant of Mrs. Tucker's Products, Division of Anderson, Clayton & Company.

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Vinyl Foam Fusing	Foundry Core Baking
Plastisol Fusing	

Wood Bonding

logs of optimum composition* for processing.

The other intriguing possibility is that cellulose may be advantageously modified. A pulp made of cellulose containing about 2% carboxymethylcellulose (CMC) can reportedly be beaten in one-sixth the usual time; paper made from this pulp, moreover, is said to have double the burst strength, 1½ times the tensile strength and 13 times more fold strength than paper from comparable untreated pulp. Tear strength, on the other hand, appears to suffer somewhat.

Institute of Paper Chemistry has applied for a patent on the method. If it can be economically applied in pulping plants, it will permit such plentiful woods as Douglas fir and Southern pine to be upgraded to approach the quality of scarce Western hemlock and Northern spruce.

Right now, this is only a possibility. But it appears as if the paper industry is intent on discovering whether it can be made a profitable reality.

Chemical Tyros

Bowing in this week, a bevy of new compounds:

• Palustric acid is a new pine gum component discovered at the U.S. Dept. of Agriculture's Naval Stores Station (Olustee, Fla..) An intermediate in the isomerization of levopimaric acid to levo-abietic acid, it is expected to help extend gum and rosin uses.

• From Chas. Pfizer & Co., Inc. (Brooklyn), acetonedicarboxylic acid (β-keto-glutaric acid) is available for the first time in pilot-plant quantities. Fermentation-derived (from citric acid), the compound reportedly shows promise in the preparation of atropine (nerve gas antidote), sequestrants, toxicants, leavening agents, etc. Instability of the compound, which has previously limited its use, is said to be minimized in the high-purity product now offered.

• What is reputedly the most complete line of radiochemicals in the industry is now offered by General Chemical Division, Allied Chemical & Dye Corp. (New York). Carrying General's Baker & Adamson label, the reagents are low-level compounds that can be used with a low investment in radiation equipment and safeguards. About 150 carbon-14, deuterated, and other radioactive products are included in this series. They are produced for General Chemical by Tracerlab, Inc.

• Ninol Laboratories, Inc. (Chicago) claims it has modified its process for amine condensates, increased their amide content to 90-95%. Result: a new array of detergents called the Ninol "Extra" series, said to feature high thickening and foam stabilization properties.

•

Tomato Boost: N-*m*-tolylphthalamic acid has been found to aid fruit set in tomato plants and to increase the flowering of young seedlings. The acid was evaluated at Michigan State University's (E. Lansing) Agricultural Experiment Station.

•

Construction Notes: Research expansion continued unabated in California this week:

• Stanford Research Institute is expected to begin a $4.5-million building program soon. SRI will reportedly launch its expansion with the purchase of 30 acres in Menlo Park from Stanford University.

• At Los Angeles, the University of California will build an atomic reactor for medical research. Tentative cost breakdown: $400,000 for a building plus equipment (other than the reactor) paid by UCLA; $200,000 for the reactor—cost to be shared by the Atomic Energy Commission and citizens' committees.

•

Fire Facts: For laboratories handling radioactive materials, a new text, published by the National Fire Protection Assn., supplies information on fire safety. Title: "Recommended Safe Practice for Laboratories Handling Radioactive Materials" (NFPA publication No. 801). It is now available in pamphlet form (41 pages, 50¢/copy) from the NFPA, 60 Batterymarch St., Boston, Mass. It will also be included in the 1955 edition of the national fire codes to be published in September.

•

Rubber Boost: Shell Chemical has just set up a manufacturing research unit at its Torrance, Calif., synthetic rubber plant. John Anderson, formerly research director at the company's Houston (Tex.) laboratory, will assume the same position at Torrance. Other supervisory personnel are being drawn from Houston and Shell Development Co.'s Emeryville (Calif.) laboratory.

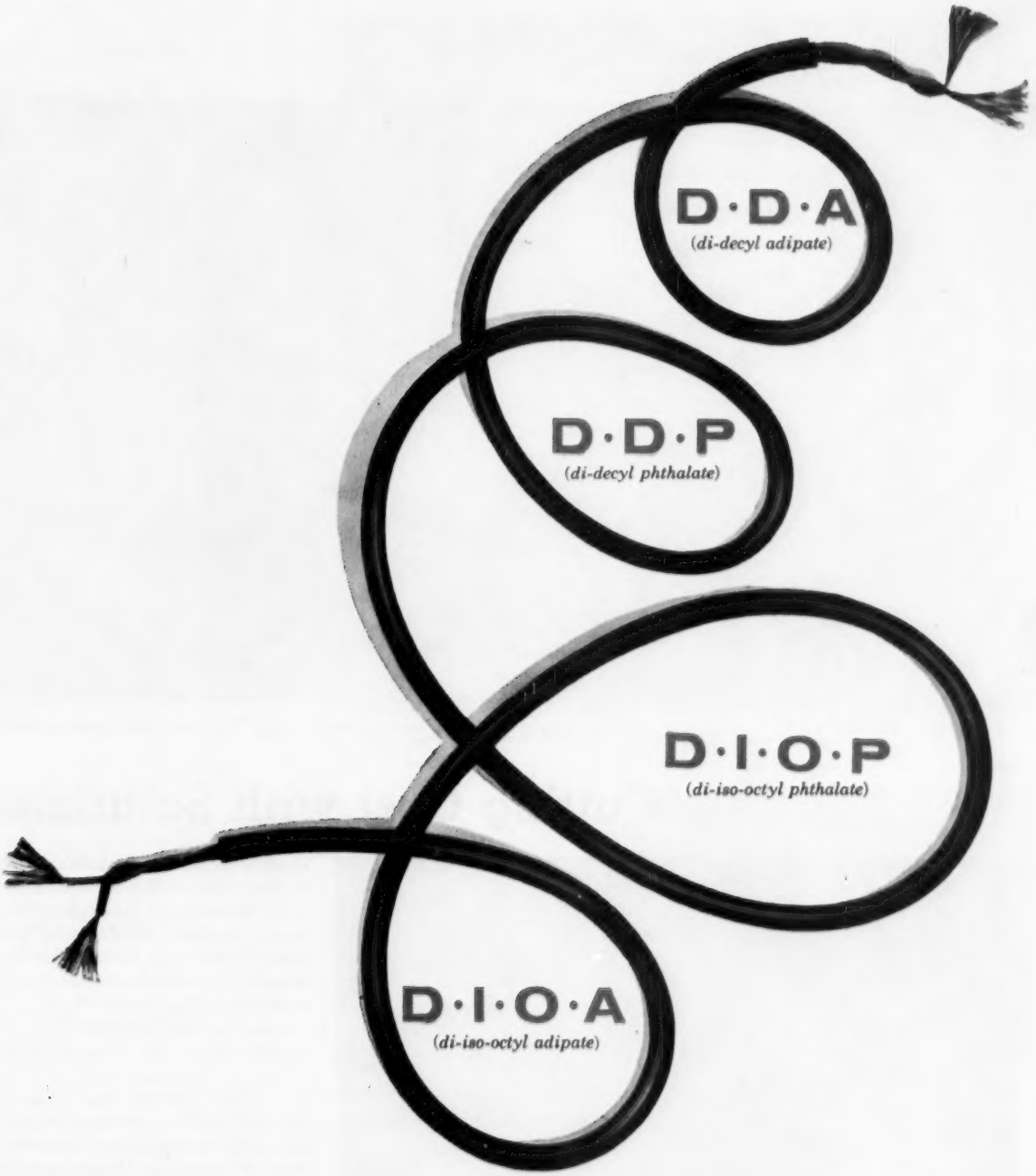
•

Transformation: A new method of imparting fungus-resistance to cellulose is claimed by chemists of Australia's Wool Textile Research Laboratory (Melbourne). Key: partial oxidation with periodic acid, followed by coupling with one of a number of different reagents. Phenylhydrazine was found to be most effective, reportedly gives complete protection in small amounts.

Fungus in the Rye

ATTIRED in protective mask and surgical gloves, researcher Ara Paul of Argonne National Laboratory injects a culture of the fungus *Claviceps purpurea* into radioactive rye plants. (Their radioactivity is induced by feeding radioactive carbon dioxide.) The fungus will produce radioactive ergot, source of the alkaloidal drugs ergonovine and ergotamine. Radioactive forms of these drugs will be extracted from the ergot at the University of Connecticut and used in tracer studies of the effect of alkaloids on human body. Since neither of the drugs can now be synthesized, they must be "grown."

* Hardwoods vary in content roughly as follows: α-cellulose, 43-55%; lignin, 17-24%; pentosans, 19-22%; alcohol-benzene extractables, 1-3%.



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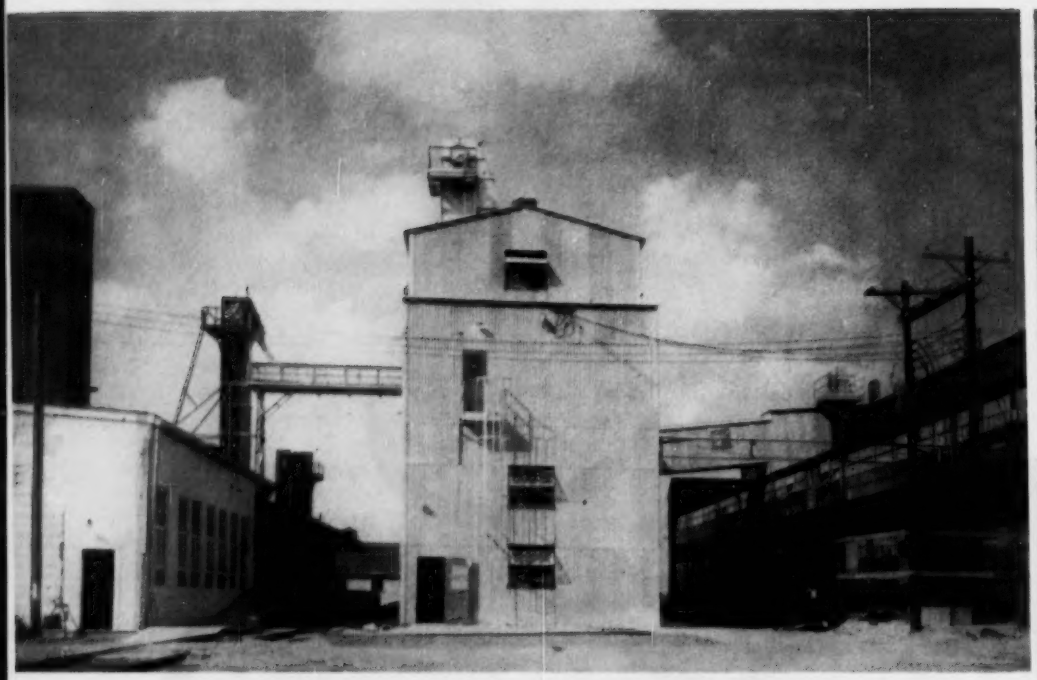
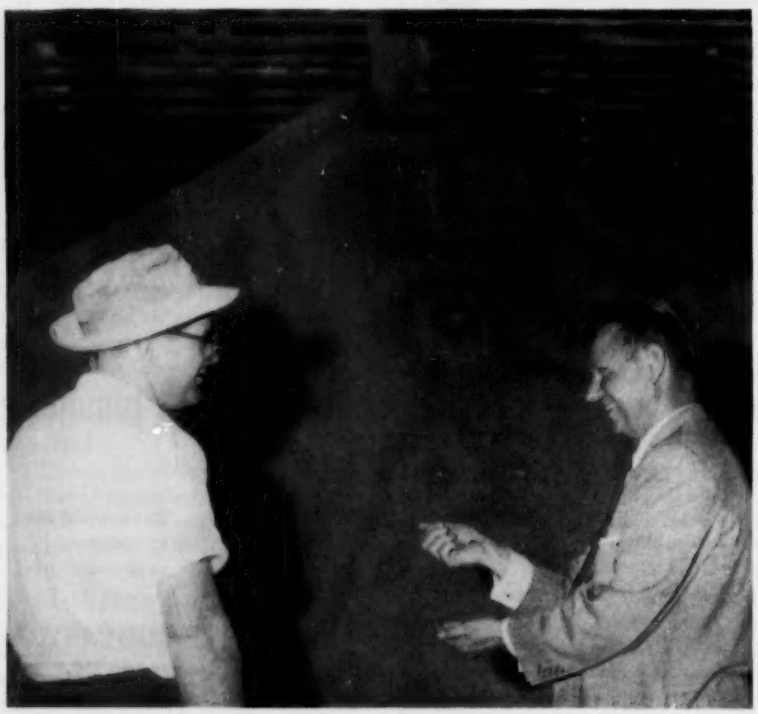


AT THE ARK-MO PLANT (left), the mixing equipment is all conventional except for the ammoniator-granulator (right)

Cutting Cost with Solutions



SPENCER'S Jim McArthur, Sharp examine product.

You'd never know it by looking at the outside, but the fertilizer-mixing plant pictured on these pages is a shining example of the most pronounced trend in modern fertilizer processing: the movement toward more concentrated products.

Owned by Ark-Mo Plant Food Co. (Walnut Ridge, Ark.), the plant uses a process developed jointly by engineers of Ark-Mo and Spencer Chemical and unveiled earlier this month. As mixing plants go, the unit —located outside of Memphis, Tenn. —is a good-sized operation. It can, for instance, handle an average load of about 20 tons/hour, although in practice the load will vary from 8 tons/hour to 30 tons/hour. But the unusual part of it is in the granulation-ammoniation section. There, the granulated dry material is ammoniated with only ammonia solutions rather than ammonium sulfate.

This is how the process works:

Raw materials, superphosphate (normal or triple or both) and potash, are weighed separately by gravimetric feeders, carried on a conveyor

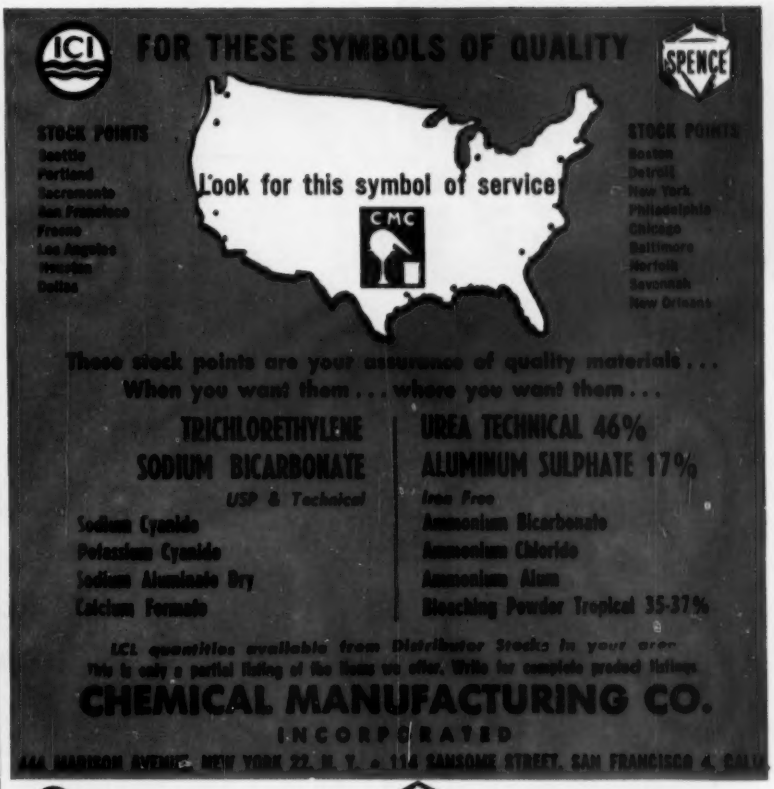
where the nitrogen is added.

belt and elevator to the screens and crushers where the oversize is ground to pass a 10-mesh screen.

In a TVA-type ammoniator-granulator, the material is ammoniated with Spensol C ammonia solution (16.6% free ammonia, 16.6% water, 66.8% ammonium nitrate for a total nitrogen content of 37%). The resulting product runs as high as 14-14-14 and, what's more, Spencer feels it's possible to go as high as a 15-15-15 analysis.

Neither Spencer nor Ark-Mo lays any claim to pioneering the granulation movement. Nor is their approach the only method of getting a 14-14-14 fertilizer. (Smith-Douglass, for one, turns out such a product by a different process.)

Both, however, feel that the ammoniation with nitrogen solutions will cut formulation costs considerably. And fertilizer men who visited the plant during its formal unveiling this month generally expressed high regard for the system. The only question in the minds of some: how long the product could be stored, since it runs high in hygroscopic ammonium nitrate That might limit its storage life.



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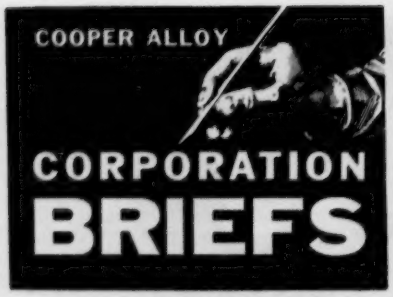

• Edited by GEORGE BLACK

NEW SERIES OF HARDENABLE STAINLESS ALLOYS

A new series of corrosion resistant precipitation hardenable stainless steel alloys has just been announced by the Research Division of Cooper Alloy Corporation. Designated PH55A, PH55B, PH55C and PH20, the four new alloys are designed to meet the following needs:

PH55A—A high strength and high hardness alloy with fair ductility, for erosion and abrasion resistance or for stressed parts in corrosive applications.

PH55B—A ductile high strength alloy of medium hardness, for shock resistance and high stresses in corrosive applications.

PH55C—A very high hardness alloy of low ductility for non-stressed, corrosion resisting parts.

PH20 —A gall resistant alloy with superior corrosion resistance.

All three alloys in the PH55 series are variations of the 19% chromium, 9% nickel analysis. By introducing and varying molybdenum, copper and silicon and controlling the carbon below .08% and the manganese below 1%, variations in hardness and ductility are achieved. The corrosion resistance of these three alloys equals or surpasses that of type 316 stainless; average Brinell hardness for Cooper Alloy PH55A, B and C is 341, 293, and 415 respectively. Cooper Alloy type PH20 is a precipitation hardenable version of the 20% chromium, 29% nickel type 20 alloy which has unusually good resistance in hot sulphuric acid and superior resistance to a long list of corrosive solutions. Average Brinell hardness of 229 can be achieved with this alloy, as compared with 130 B.H.N. for the standard 20 type alloy.

The new series of alloys fills a much needed gap in mechanical and chemical properties between 17-4PH and Cooper Alloy V2B on the higher end. Patents are pending and the alloys will be made available on a license basis. Data on request.

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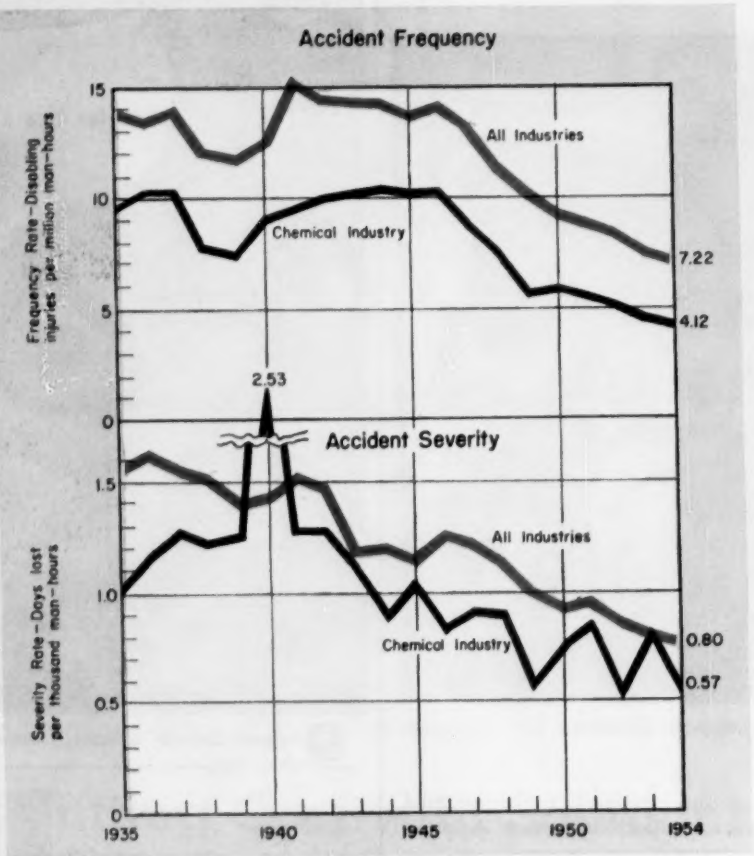

Improving on a Record

The chemical industry, which in 1953 went through its safest year on record, outdid itself in 1954 according to figures just compiled by the National Safety Council.

For example, it moved from twenty-third to sixteenth place as far as the severity of accidents was concerned. But it slid from eighth to ninth place on the frequency rating. These are the actual scores:

• **Frequency.** The frequency rate is measured by the number of disabling injuries per million man-hours worked—a disabling injury being one that results in the complete inability of an injured person to perform his usual duties for a period of at least 24 hours after the time of injury or one that causes some permanent impairment. The 1954 rating for the chemical industry was 4.12, a 9% improvement over 1953's 4.53. The average for all industry was 7.22, a 3% improvement over the 7.44 chalked up the previous year.

• **Severity.** The severity rate is the total of time charges (in days) for work injuries per one thousand man-hours of exposure. Time charges include actual calendar days of disability resulting from temporary total injuries and scheduled charges for deaths and permanent disabilities. (These latter charges are based on 6,000 days for a death, with proportionately fewer days for permanent disability, depending on the degree of severity.) In 1954, the chemical industry posted a severity rate of 0.57, a 30% improvement over the 0.81 rating of 1953. All industry meanwhile showed only a 4% improvement for the same period—0.83 to 0.80.

The bare statistics of themselves mean little, of course. The important thing for the industry, as evidenced by the graph above, is that while it can still better its performance considerably, it has been showing a steady—if slow—improvement.

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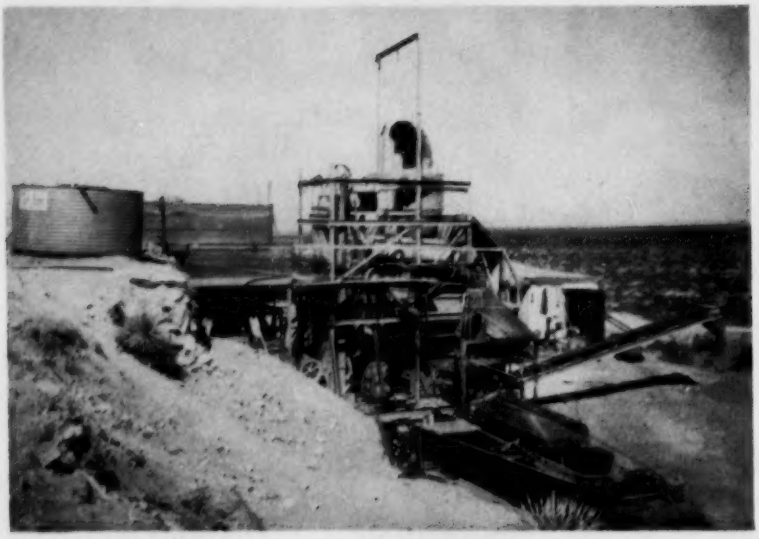

ORE SEPARATION plant that operates without water holds . . .

New Hope for Dry Processing

Ore separation plants are no novelty in the mineral-rich Silver Peak Mining District at Henderson, Nevada. But one that has created quite a stir in mining circles is the Osborne dry gravity concentrator unveiled last fortnight by the Industrial Research Div. of Raymond G. Osborne Laboratories, Inc. (Los Angeles, Calif.).

This unusual ore-processing plant has just completed two years of exhaustive testing and commercial field operation on ores of tungsten, titanium, gold, lead, silver, manganese, rare earths, and certain radioactive minerals. And recoveries ranging from 55-75% of assay value indicate that it may be the long-sought answer to economic exploitation of mineral resources in the vast waterless regions of the U.S. and other parts of the world.

The idea for concentrating ores without the aid of water did not originate with Osborne. But most of the earlier schemes, including such processes as electrostatic and magnetic separation, failed altogether or, at best, experienced only limited success.

High Standards: From the start, the company set its sights on a truly commercial process. A study of previous failures plus a careful analysis of gravity concentration indicated that a successful dry concentrator should:

- Have reasonably large capacity for its size—at least commensurate with existing wet devices.
- Be a continuous-flow device which constantly discharged concentrates and tails without supervision or manual operation.
- Be mechanically sound, capable of continued operation with a minimum of repair or replacement of worn parts.
- Compare favorably with existing equipment on the basis of initial cost per ton/hour, and cost per ton of material processed.
- Be capable of recovering sufficient values to be economically feasible.

A prototype, completed in 1952, embodied all of these features in an 800-lb. machine that handled ¾-4 tons/hour of crushed lode ores, 5-8 tons/hour of placer ores. Tests on thousand-lb. lots of various ores obtained recoveries ranging from 80-100% of that provided by good wet gravity systems. And what's more, the dry method eliminated the need for classifying the feed.

Field Test: But Osborne realized that skeptical mining engineers—fed up with dry processing's repeated failures—would have to see the concentrator at work in the field before they could be convinced. So the present plant, complete with new ore dressing facilities, was constructed and put into operation early in 1954.

Preliminary shakedown runs dictated some necessary redesign, enabled the firm to pin down operating costs and preventive maintenance schedules. Subsequent trials proved that the process was applicable to a wide range of ores, such as psilomelane (manganese), scheelite and hubnerite (tungsten).

How it Works: Treatment of the ore begins with rough sizing through a 5½-in. grizzly into a 15-ton-capacity raw-ore bin. An automatic feeder delivers ore from the bin to a scalping screen which removes ⅝-in. material before primary crushing. Oversize from the scalper is reduced to required size in a 6x12 alloy steel jaw crusher, recombined with fines at the No. 1 elevator. A second screening removes material which is already fine enough for concentrating, passes oversize on to a 7x22 hydraulic roll crusher. After final sizing, ore is dried to remove moisture; minus-200 mesh dust is removed and collected by a cyclone.

The concentrator itself is a self-discharging, continuous-flow device employing the principles of pulsed, hindered settling. It is similar to a conventional wet jig except that, in place of a water column, it utilizes a column of air pulsed by sonic vibration to induce stratification of the ore. Dry heavy media are also introduced to effect the separation between heavy and light minerals.

Outstanding feature of the plant is its mechanical simplicity. Operation of the 50-ton/day test plant required only two men; and it's estimated that three men per shift could handle any installation up to 250 tons/day. Typical operating costs, including labor, fuel, and wear-and-tear allowance, ranged from $2.65-$3.82/ton.

Encouraged by the favorable reactions of mining experts who have observed the operation, Osborne plans to put the equipment on the market immediately. The dry concentrator will be made in both 4- and 6-cell models; completely packaged mills, in 50- and 100-ton units.

Mills will be offered on a sale, lease, or joint-venture basis at about $500/ton of capacity—or roughly half of the usual wet mill price.

But even if Osborne's method turns out to be a significant improvement over other dry processes, mining men feel it will still be subject to certain limitations inherent in any dry method. At best, they feel it will be a handy alternative to wet jigging where water can't be had economically.

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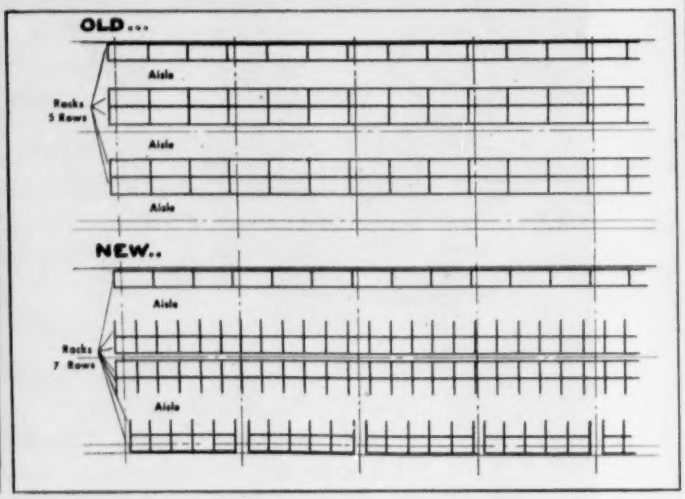
San Francisco 4, Calif.

REPLACING conventional cross-bar racks with T units, new rack design affords access to inside storage rows . . .



. . . permits extra aisle approaches to be used for additional storage area, ups capacity of one warehouse by 40%.

Drawing Dividends on Space

Without moving its outside walls an inch, Baker & Adamson Works of General Chemical Division Allied Chemical & Dye Corp. last month boosted storage capacity at its Marcus Hook (Pa.) warehouse by 40%, saved itself from the possible need of spending money and time in building additional storage facilities.

No feat of magic or might, this space-saving was made possible by a new storage rack designed by Artco Corp. (Flourtown, Pa.). Replacing conventional racks with the new units, B&A eliminated the need for a center aisle, filled the new-found area with two additional rows of storage space, thereby increasing its over-all storage area from five to seven rows.

The new rack installation at Marcus Hook is the first of its kind to be set up by Artco. Compared to conventional storage racks, installation costs run somewhat higher, says Artco, principally because more units are installed in the same area. By the same token, claims the company, balanced against the real value of added warehousing footage gained, it's a bargain few companies can afford to overlook.

New Approach: Designed to work with palletized packages, the racks are expected to find wide application in the chemical industry—or, for that matter, says Artco, in any industry dealing heavily in bulk storage.

Crux of the new design is a verticle T assembly (*above, top right*). Where conventional storage racks (*above, top left, right aisle*) have front steel stringers stretching from one steel upright to the next to support the stacked pallets, the new units substitute a vertical T bar. In effect, the T bar serves the same purpose; in addition,

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it permits straddle trucks to reach and unload inside rows once the outside rows have been emptied. The conventional stringer extending across the front of the bay in which the palletized material is placed prevents this, necessitates a distinct aisle approach for every bay of palletized loads.

In almost all warehouses having more than two parallel storage bays, use of the new design will add extra storage area. The actual amount of added area, of course, will depend on the number of rows now installed.

At Marcus Hook, Baker & Adamson originally set up its warehouse in five parallel rows with three interlacing access aisles (*above, bottom right*). Obstructing front stringers prevented straddle trucks from reaching pallets behind those in a front row, and this meant that each row had to face out on a space-consuming aisle.

On the other hand, since use of the T units provides the trucks with access to two bays, B&A was able to replace its double bay with a quadruple bay (the extra two rows fitting into the space formerly needed for an aisle). Wall bays weren't replaced with T units (*above, top left, right aisle*) since they remained single rows.

For B&A, adoption of the new units opened up almost half again as much storage room. But a big feature of this design, says Artco, is that the more bays a company now has, the more space it can add.

•

For Tomorrow's Reference: Pentaerythritol—technical bulletin contains data on the esterification, alcoholysis, use of esters of rosin and tall oil, and the application of pentaerythritol alkyds in finishes. Delaware Chemicals, Inc. (Wilmington)

• Glutonic acid—booklet offers information on the reactions, applications, specifications, and assay of the material. Chas. Pfizer & Co., Inc. (Brooklyn)

• Truck fire protection—revised fire safety standard (#512) provides revised recommendations for cargo space heating equipment. National Fire Protection Assn. (Boston)

• Chemical sealants—leaflet describes various sealants for industrial, processing, agricultural, and maintenance operations under different conditions of temperature, pressure, and use. Permatex Company, Inc. (Brooklyn)

• Coating resins—bulletin gives information and applications for alkyd, urea, melamine, silicon-alkyd, modified phenolics, maleics, and ester gum resins. Barrett Division, Allied Chemical & Dye Corp. (New York)

• Alcoholic solvent—4-p. folder provides data on physical properties, specifications, shipping sizes, plastic solubilities, performance in nitro-cellulose lacquers, and toxicity of a special alcoholic mixture suggested as substitute for butyl alcohol. Celanese Corp. of America (New York).

• Export financing—booklet furnishes information on the operation of the newly formed American Overseas Finance Corp. (New York). Data includes eligible exports, importer qualifications and limitations, credit terms, security, insurance, prior commitments and financing costs.

• Solvents—leaflet supplies ASTM distillation, API gravity, density, flash point, kauri-butanol values, aniline cloud point and percent of aromatics for petroleum aliphatic diluents and aromatic solvents. Modern Mineral Solvents Corp. (Perth Amboy, N. J.).

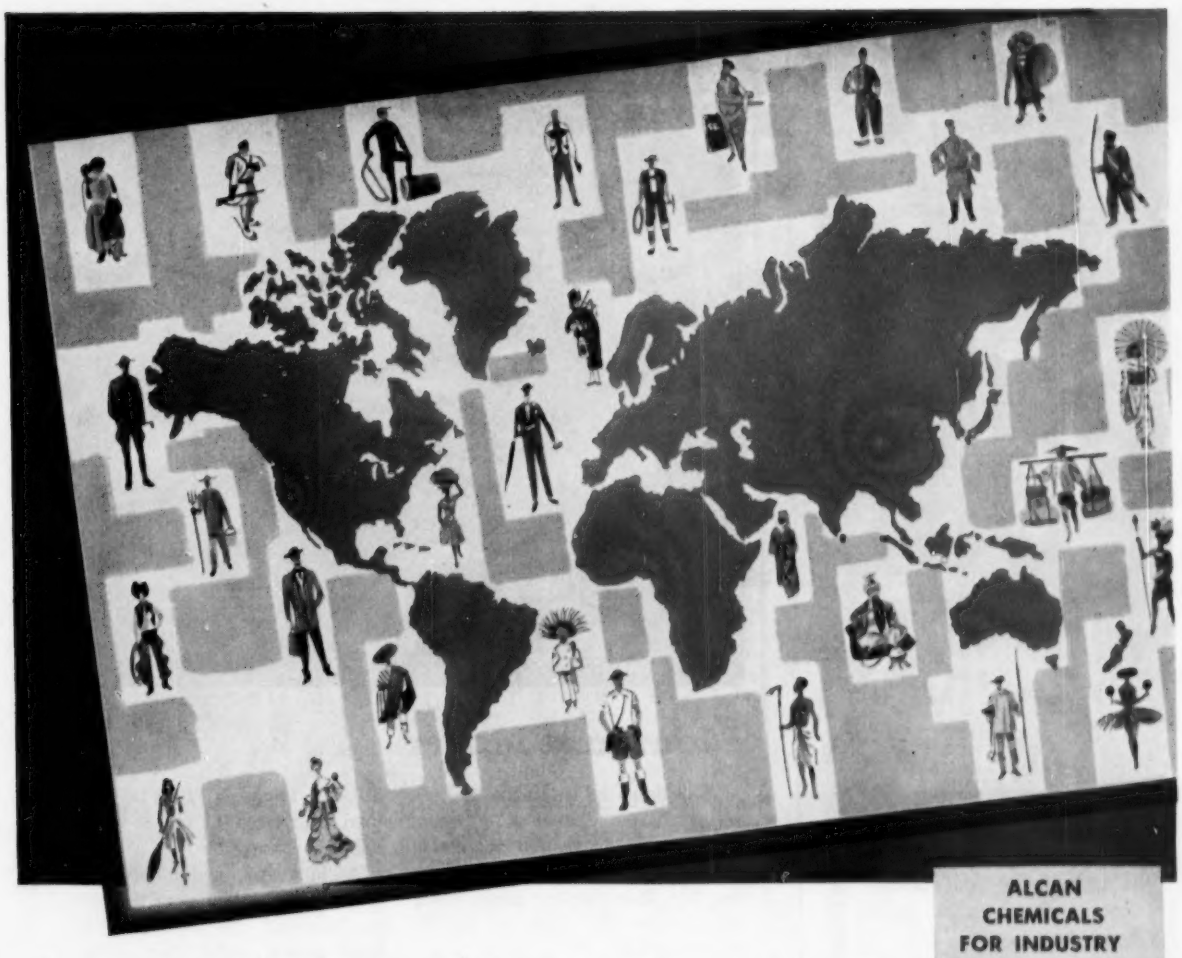
• Epon resins—publication describes various applications of Epon resins on wrought iron furniture, oil-well tubing, ball-point pens, plastic patterns, and other manufactures. No. 3., Shell Chemical Corp. (New York).

• Furfural—16-p. booklet offers physical data on furfural, including recovery, vapor pressure, temperature composition diagram for aqueous systems, and solubilities of some resins and chemicals in the material. Quaker Oats Co. (Chicago).

• Calibrated color pastes—bulletin provides information on heat and light stability, alkali resistance, and relative strength of various color pastes for vinyl plastisol compounding. Technical Bulletin No. 140, Claremont Pigment Dispersion Corp. (Brooklyn).

• Fire safety standards—"Spray Finishing Using Flammable Materials"; "Recommended Regulatory Standards for Tank Vehicles for Flammable Liquids"; and "Standards for the Storage and Handling of Liquefied Petroleum Gases" are three new publications of the National Fire Protection Assn. (Boston). Price: 35¢ each.

• Marketing abstract index—incorporating more than 22,000 separate entries, the first annual index (1954) of Chemical Market Abstracts is now available. Foster D. Snell, Inc. (N. Y.)



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Mountain Mover

Sliding down its ways, the molten-sulfur barge *Chemical Progress* (*see above*) is headed for action with the fleet of Chemical Tankers, Inc. It is the first ocean-going barge especially built to handle molten sulfur.

Primary mission of the new streamlined barge: hauling brimstone from Gulf Coast mines to Monsanto Chemical Co.'s Everett (Mass.) plant. In actual operation, the molten sulfur will first be picked up at Port Sulphur (La.) by tanker, then transferred directly to the new barge at New Haven (Conn.).

An innovation in the handling of sulfur, this eliminates the need for handling dry brimstone. The large yellow sulfur hills, long a landmark of the Everett site, will soon disappear, says Monsanto, along with the towering crane (*see below*) used to unload the dry material from the holds of conventional cargo carriers.

Resyn 50R 2128

surprisingly versatile

for film laminations

	Aluminum Foil	25% Rag Bond Paper	Saran	Cellulose Acetate	300 pt Cellophane	450 MST 53 Cellophane	N-2 Pliofilm	100 Mylar "A"	Cellulose Acetate Butyrate	Polyflex Polystyrene	Kodapak IV	Vinyl	Polyethylene
Aluminum Foil	—	E	E	E	E	E	P	G	G	E	E	E	P
25% Rag Bond Paper	E	E	E	E	E	E	E	E	E	E	E	E	P
Saran	E	E	E	G	E	E	P	G	P	E	E	E	P
Cellulose Acetate	E	E	G	G	E	E	P	G	G	E	E	E	P
300 pt Cellophane	E	E	E	E	E	E	P	G	G	E	E	E	P
450 MST 53 Cellophane	E	E	E	E	E	E	E	E	E	E	E	E	P
N-2 Pliofilm	P	E	P	P	P	E	G	G	G	E	G	E	P
100 Mylar "A"	G	E	G	G	G	E	G	G	G	E	E	E	P
Cellulose Acetate Butyrate	G	E	P	G	G	E	G	G	G	G	G	E	P
Polyflex Polystyrene	E	E	E	E	E	E	E	E	G	E	G	E	P
Kodapak IV	E	E	E	E	E	E	G	E	G	G	E	E	P
Vinyl	E	E	E	E	E	E	E	E	E	E	E	G	P
Polyethylene	P	P	P	P	P	P	P	P	P	P	P	P	P

KEY

E indicates excellent commercial bond.

G indicates that adhesion obtained is good and is adequate for many purposes.

P indicates bond is not commercially satisfactory.

RESYN 50R 2128, an internally plasticized polyvinyl acetate copolymer solution, laminates a surprising variety of films—as shown in the above chart. It is soft, tacky and markedly different from straight polyvinyl acetate. Bonds formed are permanently flexible.

RESYN 50R 2128 can be thinned with practically any organic solvent, including the lower cost aromatic hydrocarbons. Write for more information.

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Eugene T. Eldredge (left), treasurer, Hilex Co., and President Asa A. Eldredge agree that it takes quality ingredients — like Wyandotte Caustic — to make a quality bleach.

"Quality chemical ingredients helped us build volume sales"

— Asa A. Eldredge, president, Hilex Co., St. Paul, Minn.

"Our Hilex Household Bleach is known to millions as strictly a high-quality product . . . and that takes the best of ingredients," says Asa A. Eldredge, president, Hilex Co., St. Paul, Minn.

"We maintain high standards in everything we buy. We insist on Caustic that is consistently very low in copper and iron content. This is a fundamental with us. We test every tank car of Caustic to see that it meets our stringent requirements.

"We have been buying Wyandotte Caustic for more than 10 years. We have found that Wyandotte products not only meet our rigid specifications for quality, but that Wyandotte gives us excellent service as well.

"Personally, we feel that when we buy this way, and know the quality of our ingredients, our own selling job becomes much easier. The Hilex Company's growth and sales record are proof of this."

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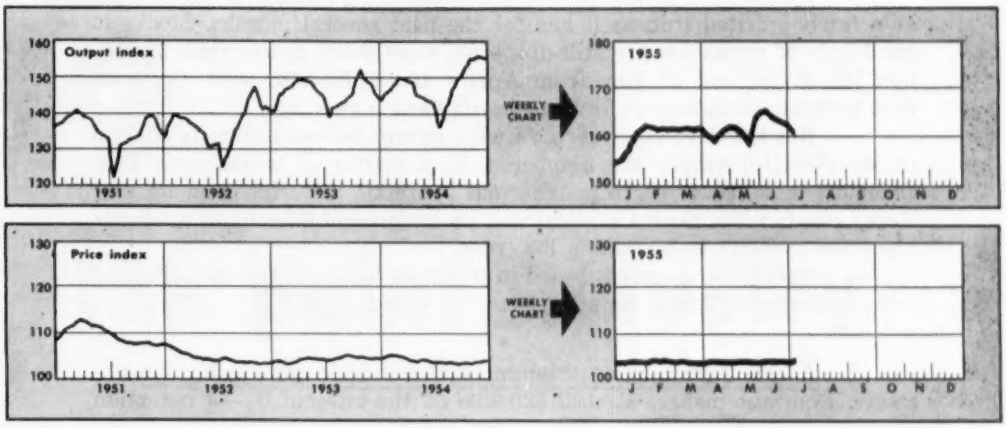
MARKETS . . . . . .



WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947-49=100)	157.2	155.1	136.8
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.3	104.3	104.2
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	459.3	459.6	317.6

MONTHLY INDICATORS—Wholesale Prices (Index 1947-1949=100)	Latest Month	Preceding Month	Year Ago
All Commodities (Other than Farm and Foods)	115.6	115.5	114.2
Chemicals and Allied Products	106.8	106.8	106.8
Industrial Chemicals	117.8	117.6	117.0

MARKET LETTER

New urea users continue to bite into this country's currently wide capacity-consumption spread *(CW, July 23, p. 77)*. Latest to enter the industrial urea market: Borden Chemical's soon-due—within the next two months—Browntown (Wis.) resins plant.

The installation is designed for an initial production rate of more than 12 million lbs./year, with a likely 80% of the output comprising urea-formaldehyde products; the remainder, phenol- and resorcinol-formaldehyde resins.

The company picked the site with an eye to the growing Midwestern woodworking and paper industries, will supply adhesives to the former, wet-strength resins to the latter.

•

There's little indication at the moment that pentaerythritol demand, on the whole, will ease. Paint producers' calls may be fewer now, but other outlets (e.g., resins) have most PE makers pushing capacity levels. And there are still some delays in delivery. The current strike at one PE plant is, of course, also adding pressure to the situation.

Despite the imminence of additional synthetic glycerine (a competitive product) hitting the market, PE sellers are evincing confidence in the latter's future. Witness the expressed plans of Hercules Powder and Heyden Chemical: by next year both will be adding substantial PE quantities to total U.S. production—25 million lbs. from Heyden, 24 million from Hercules.

Speaking of glycerine, demand continues, generally, to move along at a fairly spirited trot, as it has for the past several months. Stocks in the hands of producers are still dropping, were down to less than 39 million lbs. at the end of May from April's 40.4-million-lb. level. Compare that with the 60-million-lb. inventories on hand a year ago.

But the days of glycerine's wide swings between scarcity and an overly plentiful supply are numbered. In a matter of weeks now, Dow Chemical is slated to begin pouring out synthetic material from its new Texas plant, while Shell Chemical will up its present 60-million synthetic glycerine capacity to 80 million lbs./year.

Only price comment heard in the trade today: if tags are changed —up or down—it'll be a big surprise.

•

A new price cut on thiamine hydrochloride catches no one unaware. Domestic makers slashed $20/kilo off the vitamin B_1—a reduction identical with the riboflavin drop of last week.

In the thiamine case, the move, admittedly, is aimed at combating low-cost foreign material, which has been hitting U. S. markets for some time. Whether the new domestic price, $80/kilo, is attractive enough to recapture straying customers, though, is a question not immediately answerable.

•

Another porism attracting much attention these days: Should the U. S. government release a portion of its stockpiled natural rubber? Last week one of the country's biggest users reiterated the periodically heard charge that the stockpile considerably exceeds all reasonable estimates of the amount that might be needed in a national emergency. Most such consumers would have the government relinquish about 200,000 tons. That amount, presumably, would reverse the uptrending natural rubber price, now above 40¢/lb.—some 8¢ higher than it was last month.

But stock answer from the Office of Defense Mobilization to the persistent urging is, and will likely continue to be, a flat "no can do," plus a substantiating quote from the Stockpile Act, which provides that Congress must approve release of held material, and that such release "should not affect" the civilian market.

•

One condition that could sway lawmakers to let loose of the natural rubber pile is commercial production of a suitable substitute. Closest thing on the horizon is Goodrich-Gulf's synthetic rubber (*CW, July 9, p. 50*) now being tested on the road via large-size truck tires.

Developers, still mum on details, believe the new rubber can eventually be marketed "at a price that would be competitive with the prices prevailing on crude rubber during 1955." Teaser: Which price, which month?

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending July 25, 1955

DOWN

	Change	New Price		Change	New Price
Mercury metal, 76-lb. flask, net flask	$ 6.00	$262.00	Thiamine hydrochloride, USP, reg. or ampul. type, fib. drms. kilo.	$20.00	$80.00
Sodium arsenite soln., dms., wks., gal.	.11	.59			

All prices per pound unless quantity is stated.

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the paint industry

make good products better

What can "Dutch Boy" Chemicals do for you?

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The chemical in question is new *Dutch Boy Bentone** 34 – a gelling agent developed by National Lead Company research less than four years ago.

With *Bentone* 34, paint makers have been able to get a controllable increase in viscosity – smoother brushability – better color control – reinforced film – pigment suspension – long shelf life.

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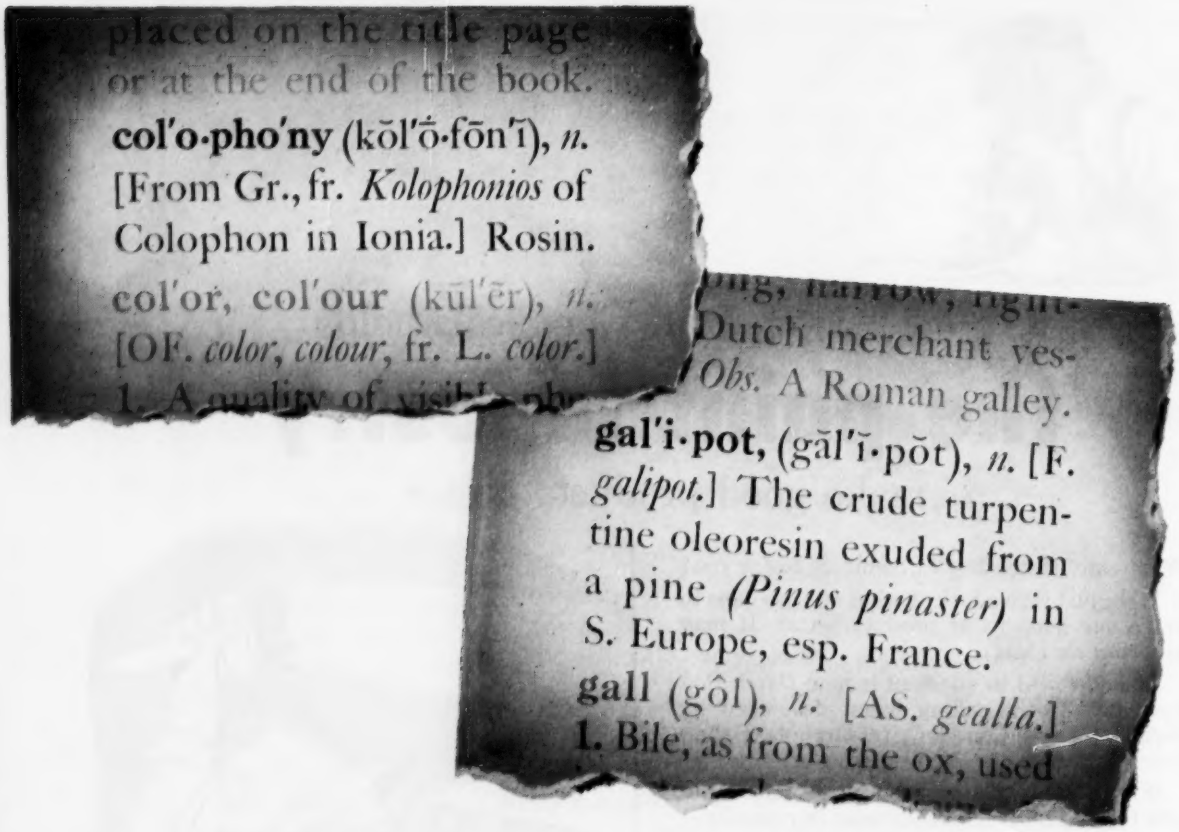
placed on the title page
or at the end of the book.
col'o·pho'ny (kŏl'ō·fō'nĭ), n.
[From Gr., fr. Kolophonios of
Colophon in Ionia.] Rosin.
col'or, col'our (kŭl'ẽr), n.
[OF. color, colour, fr. L. color.]
Dutch merchant ves-
Obs. A Roman galley.
gal'i·pot, (găl'ĭ·pŏt), n. [F.
galipot.] The crude turpen-
tine oleoresin exuded from
a pine (Pinus pinaster) in
S. Europe, esp. France.
gall (gôl), n. [AS. gealla.]
1. Bile, as from the ox, used

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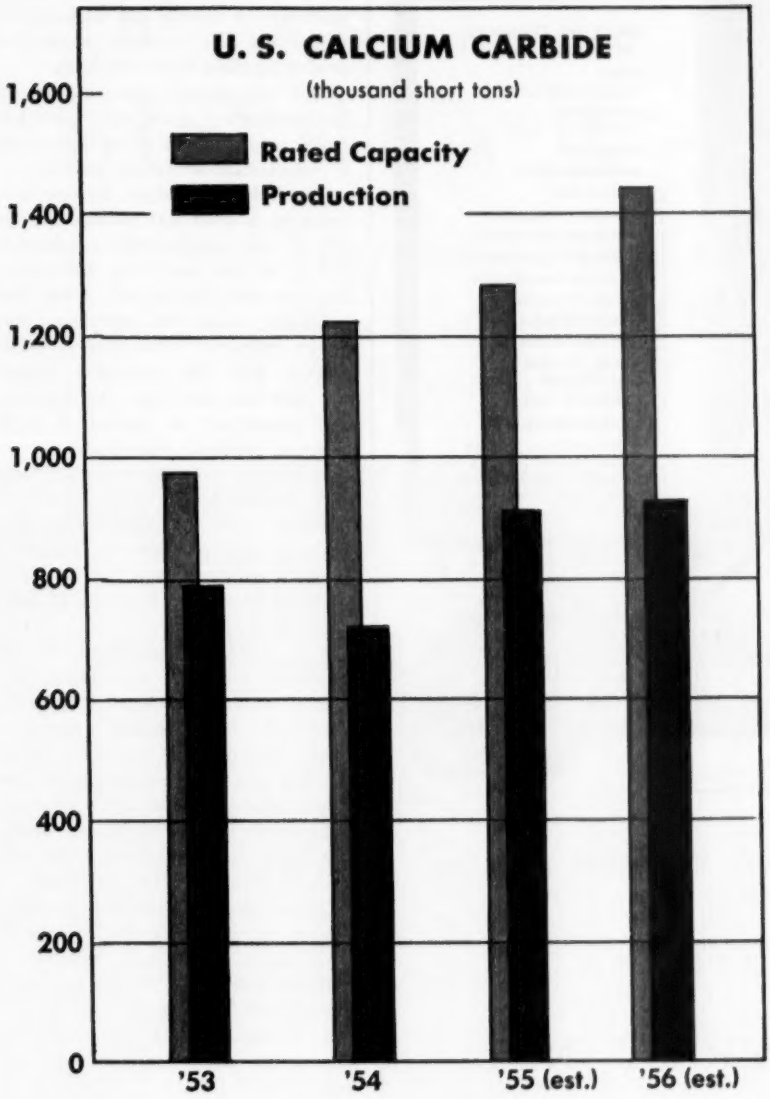


No Cause for Lament

Is calcium carbide on the way out as a major source of acetylene? Is acetylene itself losing ground as a chemical raw material? The pros and cons of questions such as these are today reverberating throughout several segments of the chemical process industries.

For calcium carbide—consumed in the U.S. almost entirely in the production of acetylene—is tied, through the latter, to a wide roster of products, including vinyl chlorides, neoprene, trichloroethylene, acrylonitrile, vinyl acetates.

Fuse of the interindustry discussion is sparked by a currently circulating government survey of the calcium carbide and acetylene market situation. The analysis, some trade observers insist to *CW*, is inaccurate on many scores, wrongly implies that conditions are much worse than they are.

On the other side of the fence, government analysts point out that the survey is based, in the main, on data gathered from industry. And while admitting to some misconceptions (witness a soon-due revision of the carbide report), they are reluctant to accept wholeheartedly all the proffered "corrections" which would undoubtedly do much to brighten the picture.

Specific points of contention: 1954's rated capacity, production, production-to-capacity ratio for acetylene, and the reported end use patterns of both carbide and acetylene.

Production-capacity ratio of the latter, for example, is pegged at 49% —10% under the previous year. It should be closer to a 60-65% range, dissenters say.

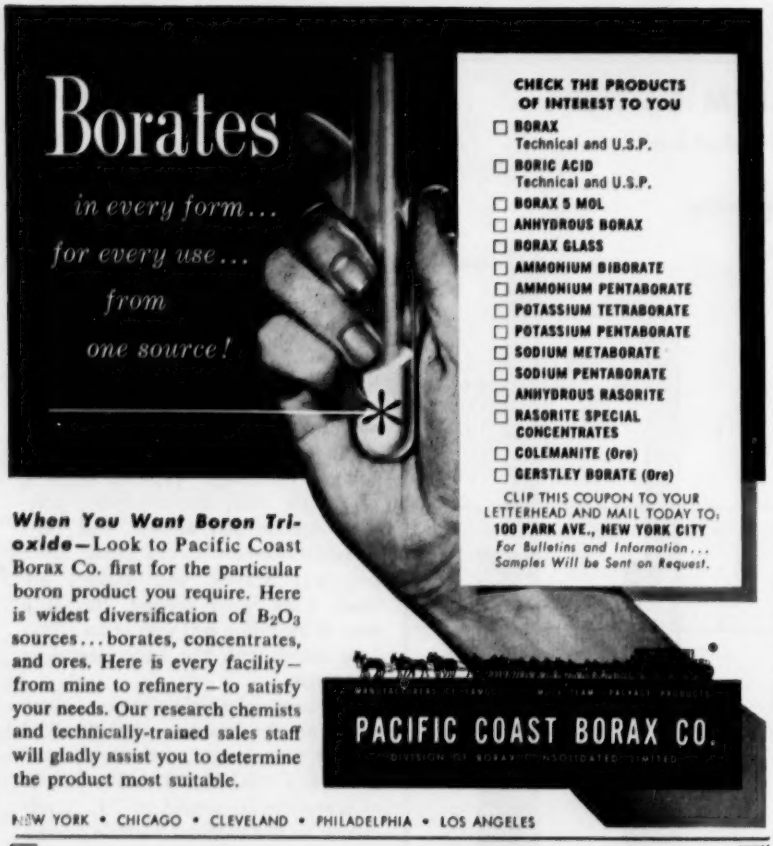
Practically every acetylene consumption figure in the government study is under fire, as are some of the category headings. Typical: lumping of "acetic acid, acetaldehyde, polyvinyl acetate and alcohol, and vinyl acetate monomers" in one group. Since polyvinyl acetate and alcohol are made from vinyl acetate, this is a case of including end uses of an acetylene outlet with the basic acetylene consumer.

But more glaringly delusive, claim critics, are the data presented. Chalked against that same "acetic acid, etc." group is a total of 221 million cu. ft. of acetylene consumed in '54. A reference to the calcium carbide survey shows that the identical category used 135,000 tons of carbide. Applying an accepted factor (9,000 cu. ft. of acetylene from 1 ton of carbide), the acetylene consumption exceeded 1.2 billion cu. ft. (At least one market researcher, however, slices that estimate in half, but even then his total more than doubles Washington's 221 million.)

In like manner, the per-and trichloroethylene use of acetylene would tally to 837 million cu. ft. instead of the 93 million reported; and illumination would be, at the minimum, 18 million cu. ft., rather than the 2 million indicated.

In Spite of . . .: It's true, of course, that in chemicals manufacture acetylene has run up against stiff competition, particularly from ethylene. In the production of vinyl chloride, for instance, some 45% of present capacity reportedly utilizes the ethylene route compared with 55% in the acetylene column.

And not so very long ago the ethylene process was dominant in acrylonitrile production. Further, in the last year or two, newer methods of making acetaldehyde and acetic acid and their derivatives by direct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oxidation of natural gas have all but edged out the catalytic method of producing them from acetylene.

But unimpeded expansion in use and production of the vinyls, acrylonitrile, neoprene, and other users assure a concomitant acetylene growth.

Vinyl chloride output, for one, may jump to a near-500 million lbs. by '57 or '58; acrylonitrile production, too, is on the road to a 200-million lbs./year rate. By the end of this year neoprene, made via acetylene, may hit an estimated 155-million-lb. peak.

Add, too, the explosive impact on acetylene use that development and growth of an armful of high-pressure synthesis chemicals—the so-called Reppe products—will have. General Aniline & Film's now-building full-scale plant at Calvert City, Ky.—due to start operations in December of this year—may turn out as much as 30 or 40 million lbs./year of such products.

Raw material acetylene will be pipelined in from Air Reduction's nearby plant. Also tapping into the calcium carbide derived acetylene there: Goodrich Chemical's vinyl chloride and acrylonitrile plants; Du Pont's broadening neoprene operations at Louisville and at Montague, Mich. The latter, due in September '56, will consume Union Carbide material.

Others, too, are showing increasing interest in joining carbide-clustered communities. First such, started at Niagara Falls in the '20s, hooked onto Union Carbide's over-the-fence acetylene. Ashtabula (O.) also continues to expand as a carbide-acetylene center.

Carbide Spreading: The lengthening list of carbide-acetylene consumers lends weight to the argument of those who are certain the material as an acetylene source is here to stay; that despite inroads being made by newer, necessarily large-scale hydrocarbon process* plants in supplying acetylene, the old-line method is far from throwing in the towel.

Fact is, calcium carbide output this year (815,000 short tons, *see chart*), will top the previous high, '53's 793,000 tons, and may fall some 125,000 tons short of an anticipated 940,000-ton production in 1956.

Output-capacity ratio is expected to inch up nationally to at least 65%. One major maker reports commit-

* Wulff; Sachsse; Schoch.

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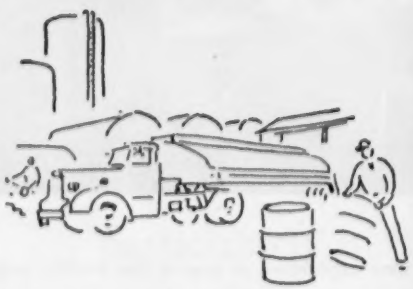

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ments already sewn up that will permit operations at 80% by the end of '56, 100% of today's capacity by '58. (The production-potential spread isn't alarming in this industry—most carbide furnaces can be switched to ferro alloys, e.g., ferrosilicons.)

Even the more rabid carbide-acetylene rooters, though, will not too volubly contest this point: over the longer term, hydrocarbon-acetylene probably will clip along at a faster rate. Currently, perhaps 10-12% of total U.S. acetylene comes from noncarbide sources; within the next five years the percentage may double.

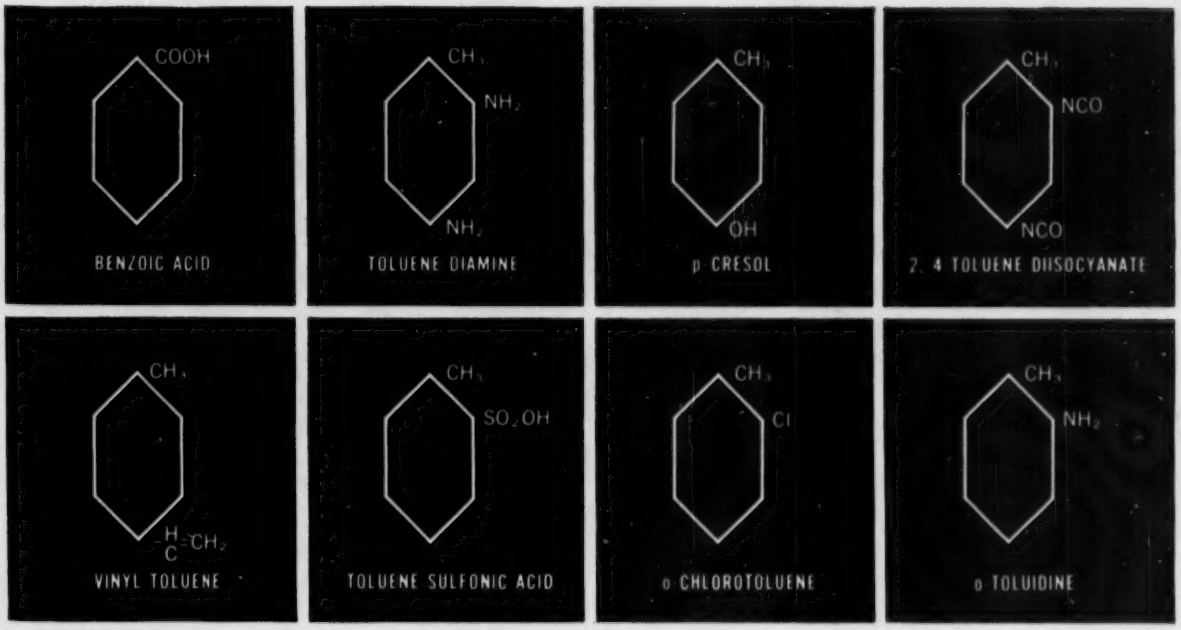
Expansion of the latter methods of producing acetylene, on the surface, appears puzzling, for the traditional carbide process has many strong factors in its favor. Not the least is the high-purity acetylene (99.6%) which it turns out. Compare this with the 8-16% acetylene contained in products resulting from the cracking of gases.

The big push behind any possible future trend away from carbide may stem from the need for large quantities of cheap power, plus a handy supply of raw materials (limestone or lime, coal, coke, etc.), for the production of the carbide. There are comparatively few areas which have this necessary combination. Today four producers—Air Reduction, Union Carbide, Midwest Carbide, and Pacific Carbide & Alloys—operate 11 plants at only 9 U.S. points. Consequently, many chemical producers who require acetylene have looked into—and will continue to investigate—the gas processes.

At present, noncarbide acetylene installations are few: Union Carbide and Monsanto at Texas City, American Cyanamid at New Orleans. It's also reported that a major chemical firm is considering a Wulff process plant on the West Coast.

At any rate, expansions in acetylene use and manufacture—whether from hydrocarbon oxidation, thermal processes, or calcium carbide—belie the implications that the versatile raw material is slipping.

Too, there appears to be little basis for the reasoning that carbide will soon relinquish top spot as an acetylene source. Additional acetylene customers mushrooming around efficient carbide-acetylene plants will stave off the competition—at least for some time to come.



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ADDING SOFTENER: Will the housewife take the step toward fluffier clothes?

Soft Touch is Tough to Sell

Rinse-added fabric softeners for home laundries may be the next big kitchen-chemical.

Sales are still picayune—estimated now at about $500,000 for all brands despite energetic push by a dozen or more firms, but . . .

Entry in the past few months of two major firms, marketwise in laundry chemicals, could nudge softeners into a sales boom.

There's a dilemma that faces the small manufacturer of virtually any newly introduced product—whether or not to welcome the competition of large firms with similar products. The small firm benefits from the speedy way a well-financed promotion can develop consumer acceptance of an item—but the large firm often ends up with the lion's share of the market.

Now, a number of household chemical firms face that precise problem. For the past few years they've been trying to build sales of fabric softeners* for the home laundry. Some such products have caught on to a limited degree, some have had to be withdrawn from the market. Currently, sales are $0.5 million/year for all brands.

But within the past two to three months, two companies that are nationally established as makers of home laundry aids—Corn Products Refining Co. (New York), A. E. Staley Mfg. Co. (Decatur, Ill.)—have stepped into the fabric softener picture. Both have acquired tradenamed products that were among the pioneer softeners: Staley took Fluff-It Corp.'s (Cleveland) Fluff-It, changed the name to Sta-Puf. Corn Products bought Laurel Products Co.'s (Cleveland) Nu Soft.

What, many specialties makers are now wondering, will these relatively big firms do to the softener business?

Promotion Splash: They got a clue just a few weeks ago when Staley blasted off Sta-Puf with a strong campaign in eleven cities scattered across the nation—easily the biggest promotion yet of the softeners. (In some of these same cities, Corn Products is also selling Nu Soft, but so far it hasn't begun its high-pressure selling and won't give out details on a rumored upcoming sales blitz.)

While they await results of this campaign, the handful of other firms continue to plug along, building sales for their own locally distributed materials. Some of the companies currently selling softeners: Ardmore Chemical Co. (San Francisco), Diaper Care; Barcolene Co. (Boston), Sun-Soft; Ben-Den Chemical Co. (Chicago), Fluff All; Cal Products Co. (San Francisco), Sof'n, Diasof and Fleece; Economics Laboratories (St. Paul), Sof-Tize; Marlyn Chemical Co. (Calumet City, Ill.) Sof-T and Down-Dip; Masco Chemical Corp. (Houston), Angel-Sof; and Sweet Clean Products Co. (Euclid, Ohio), So-Soft.

Extra Step: The big sales problem all firms have is twofold: Use of the softeners demands an extra washing step, and many housewives don't believe their laundry benefits from the softener. Ever since the products first came on the market (and some, like Marlyn's Sof-T and Ardmore's Diaper Care have been sold in limited areas since about 1950—Sof-T was introduced in Cincinnati and Columbus; Diaper Care on the West Coast), these bugaboos have kept sales leashed.

Use of the softeners really isn't difficult—most companies tell the housewife to add 3-5 tablespoons of the softener to the last rinse.

It is a simple, inexpensive extra step, but it has been difficult to persuade many housewives to try it. This despite guaranteed claims that towels will be much fluffier, that static electricity on synthetics is lowered, that clothes will be softer, more wrinkle-free, and easier to iron.

Cajolery, Bribery, Threats: Some specialties makers have tried everything but threats to get people to test their products. Ben-Den, for example, lately has been sending a free bottle of Fluff All to every new mother in the Chicago area.

Sweet Clean Products tried a different plan, got encouraging success. Its product, So Soft, is sold by routemen. To kick off So Soft, 2,400 housewives were given a gallon, asked to pay the following week only if they used and liked the product. Just 85 patrons didn't like the product, and 1,800 have since become regular customers.

* These fabric softeners are not to be confused with water softeners added to washing water—products typified by Calgonite. The softeners (one firm calls its product "miracle rinse") are outgrowths of similarly termed cationic softeners used in the textile trade.

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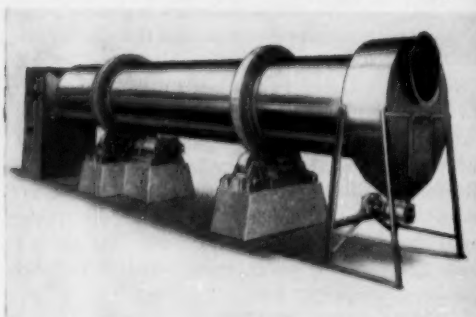

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SPECIALTIES . . . . .

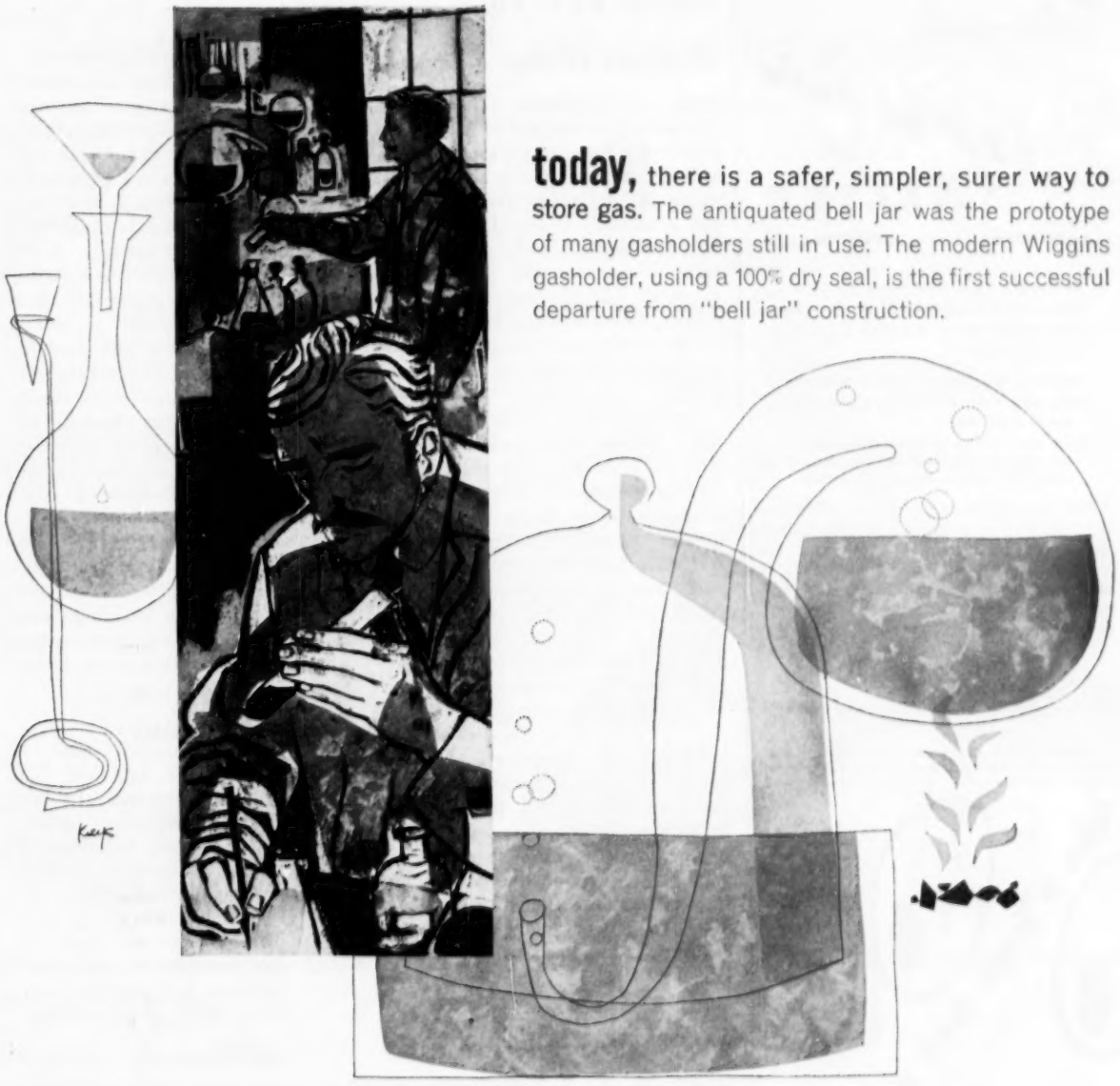
Nothing Complicated: Although the market for these softeners is yet to boom, many specialties makers regard them as ideal additions to their lines of household chemicals (ammonia, plastic or liquid starch, and bleaches). Despite the reluctance of some firms to talk about product composition, formulation of the softeners is relatively simple, and firms selling the basic quaternary ammonium compounds for them—Armour, Rohm and Haas, Onyx, to name but three—are willing to help firms devise suitable softeners.

Physically, the softeners are viscous liquids, generally tinted a pastel color—green is a favorite, but some are deep blue. They have a faint ammonia odor (often masked), and are commonly bottled; quarts and half gallons are favored sizes, although some firms sell pint, ten-ounce and gallon containers.

The percentage of active ingredients varies, but the quat is generally 5-15% of the formulation. Angel-Sof is typical: it contains 7.5% distearyl dimethyl ammonium chloride (other quats, included for germicidal effect, have been plugged by other makers, with negligible success). Some products, like Nu Soft, are more concentrated, however, and there is still a debate about what is best. Most of the products sell for about 49¢/quart (although there is wide variation here, too), and use of anywhere from 2-3 tablespoons to half a cup per wash is recommended. Cost: 7¢/wash.

Commercial Cousin: All the softeners are related to cationic textile softeners that have been sold to the trade since the '30s. A more direct relative is Armour's Velva-Soft, a softener for commercial laundries for several years. Sales of this are now estimated to be three to four times that of home laundry softeners, or about $1.5 million yearly. Success of Velva-Soft encouraged Armour to try a home product of its own (Balloon) this spring (*CW, Feb. 5, p. 42*).

Armour's commercial success, and the results of several other firm's early selling, provides pretty convincing evidence that softeners have legitimate use, and—once tried—real housewife appeal. But how to get the housewife to try it? That's the secret all softener makers are trying to discover, for the 36 million washer owners (about 12 million automatics) could provide a market worth plenty.



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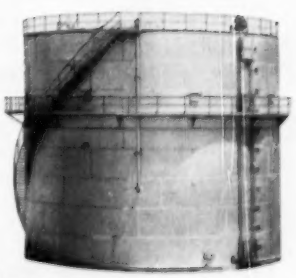

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Bugless Water

Being water-insoluble is generally a desirable characteristic in insecticides—they won't readily wash off of vegetation. But one big job requires the opposite. Workers on irrigated farms are continually menaced by mosquitoes breeding in the canals—to control these a water-soluble larvacide is required. Many of the best insecticides, however, remain suspended in the water—and thus effective—at best for only a couple of days (sometimes only for hours).

Seeking to find soluble insecticides, the U.S. Dept. of Agriculture has just tested 141 insecticides, found five organic phosphates that were effective against mosquito larvae, even when greatly diluted. Of the five—Bayer L 13/59, Shell OS 2046, para-oxon, parathion, and methyl parathion—the Bayer and the Shell products are believed to hold most promise. Both highly water-soluble, they also are both effective in solutions of one part to a million parts water.

The other three insecticides lost out because low solubility made them expensive to use (1,000 gallons of parathion and methyl parathion or 200 gallons of para-oxon would be required to treat a million gallons of water). All five of the insecticides proved durable—standing as much as 20 weeks' indoor storage or 20 days' exposure to sunlight without losing killing power.

Sweet and Low Calorie

Dieters—and it's a growing way of life*—generally find that they have two hurdles to cross: hunger and appetite. Hunger (the actual pang in the stomach) isn't too hard to conquer: original enthusiasm gets you over the first week and then your stomach adjusts and you aren't bothered any more. The high hurdle most dieters trip over is appetite—the craving for the taste-thrill of a particular food, usually a calorie-rich sweet or dessert.

The plain fact is that when a man wants a piece of cherry pie a la mode, he isn't happy to settle for a handful of grapes. Hence the emphasis in recent years on synthetic sweeteners.

The latest no-calorie sweetener is Du Pont's Cylan Calcium Cyclamate (technically calcium cyclohexylsulfamate). A derivative of sulfamic acid, for which the Grasselli Chemicals Dept. has been seeking new uses, Cylan has just gone into commercial production at the Grasselli James River, Va., plant. The new product, Du Pont found, is a white crystalline material, readily soluble in water, stable and compatible with food ingredients through all cooking-temperature ranges without losing sweetness and without a bitter aftertaste. It's about 30-40 times as sweet as sucrose, and, like Abbott's Sucaryl Sodium (sodium cyclohexylsulfamate), contributes no calories.

Not sold directly to dieters, Cylan is available in 100-lb. drums (at $2.95 to $3.50/lb.) to makers of low-calorie jellies, canned fruits, puddings, carbonated beverages, ice cream, cakes, cookies, pies and other sweet foods.

* There are over 30 million seriously overweight people in the United States, and a considerably larger number who are a little too bulky for current fashion or are afraid they soon will be if they don't watch out. Another big market: 2-5 million diabetics.

Delayed Sprout

Potato growers have long had difficulty keeping potatoes in good shape for any length of time after harvest. Stored, even at temperatures down to 55 or 45 F, potatoes usually develop sprouts that rob them of about 3.5% (at 45 F)—5% (at 55 F) of their weight. The problem has been attacked with a variety of sprout inhibitors, but there has generally been one stumbling block: Most inhibitors increased rotting.

The most promising substance found so far is 3-chloro-isopropyl-N-phenyl carbamate (3-Cl-IPC). The U.S. Dept. of Agriculture has been testing 3-Cl-IPC, along with a number of others, reports that it prevented sprouts on four varieties of potatoes (Chippewa, Kennebec, Irish Cobbler, and Katahdin) for at least eight months. The treatment also reduced rotting by about one-third.

Cooling is required for the treatment to be effective—above 70 F sprouting was not inhibited much.

USDA doesn't recommend commercial use of 3-Cl-IPC at present, however. First it must be proved that residues neither lower the quality of the potatoes nor are dangerous to the consumer. Hopeful sign: the material proved effective at a low dosage rate, which would minimize residue.

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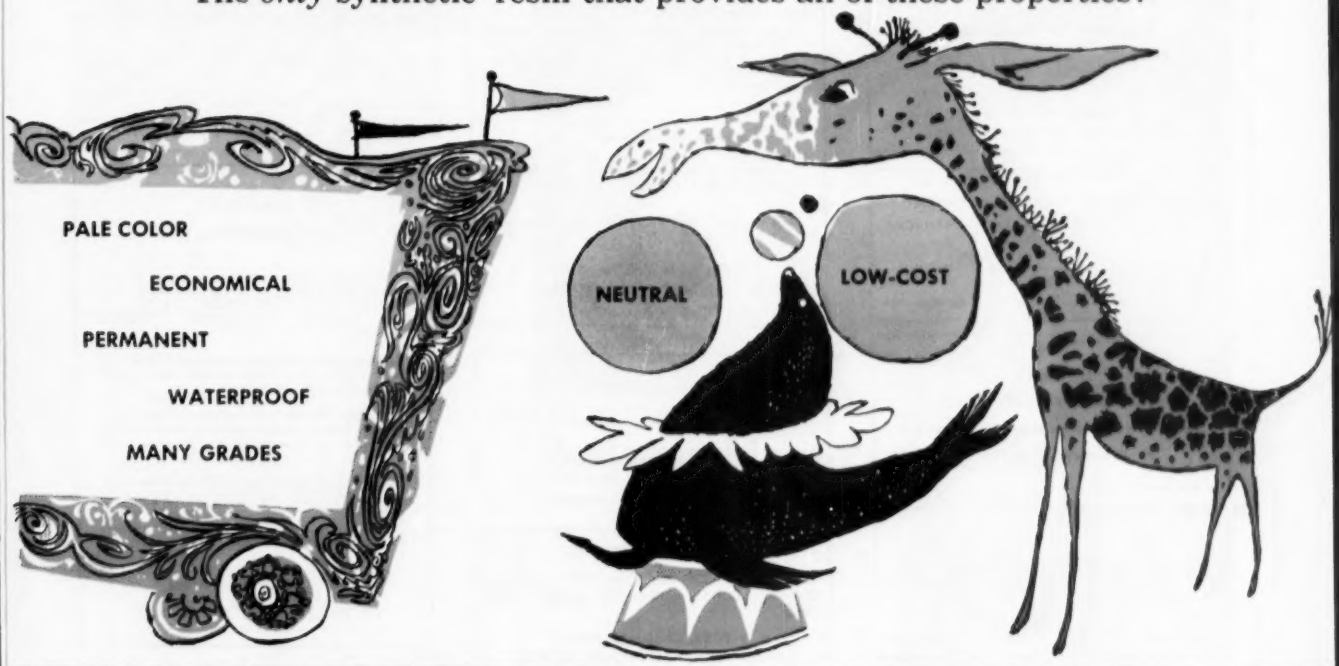

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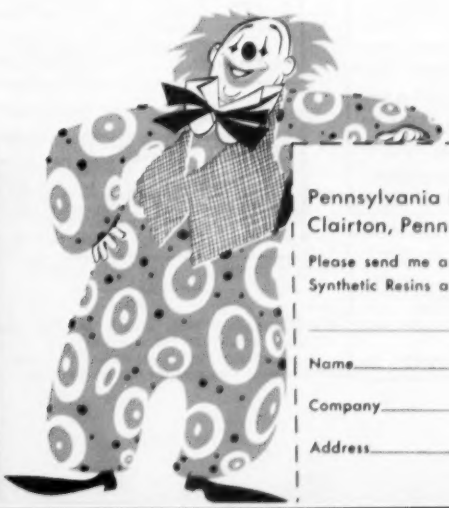

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Peelable Meat Peels Costs

THE THOUGHT behind the bouncing supermarket business is, as everybody knows, low prices made possible through low overhead, low mark-up, and high volume. Until recent years, the whole idea seemed to go to pieces at the meat counter. Surrounded by fast-moving merchandising, the meat department remained an island of painfully slow tradition which kept customers waiting, kept batteries of highly paid butchers operating at relatively low efficiency.

For the past few years, many markets have been taking the first step forward—putting precut, cellophane-wrapped meat into self-service freezers. Now, several supermarket chains are taking a second step—packaging their precut meat in a peelable micro-wax developed by M. E. Wallis (M. E. Wallis Plastic Wax Co., Milwaukee) and L. Sonneborn Sons, Inc, New York, and used on poultry back in '52 (*CW, May 31, '52*).*

One chain says it has cut meat department costs 20%. Costs are cut three ways: downgrading of meat is ended; packaging is faster; butcher costs are smaller because more meat can be cut at once, permitting use of an "assembly line."

For the housewife it provides more sanitary meat (less handling), the opportunity to buy a week's meat at once (it will keep that long), and one big disadvantage: she can't see what she's buying. Expecting resistance here, one chain offered a money-back guarantee, reports no takers to date.

* Still biggest micro-wax user: the paper industry, where the waxes are replacing paraffin on milk cartons, bread wraps, etc.

SPECIALTIES

Fire Killer: A new fire-extinguishing agent has been developed by Beall Research and Engineering Corp. (Washington, D.C.) to eliminate the shortcomings of widely-used carbon tetrachloride. CM-7, as the new compound, an azeotropic mixture of chloromethanes, is tagged, is made under license by Red Comet, Inc. (Littleton, Colo.) for both manual and automatic installations. Its touted advantages over carbon tet—it has a lower freezing point, produces 10-20% more vapor, combines with toxic carbon monoxide gas to produce carbon dioxide, and will not form phosgene.

•

Static Queller: By incorporating 2-10% N-n-butyllactamide, the Dictaphone Corp. (Bridgeport, Conn.) is producing a sound-recording medium said to have antistatic properties (U.S. Pat. 2,712,505).

•

Silicate Boost: Procter & Gamble Co.'s Victor Mills, Hans Stromberg and Clifford Kemp have worked out a new system of making spray-dried detergents that are claimed to be comparatively dust-free, and have a reduced tendency toward stickiness, caking and balling (U.S. Pat. 2,712,529). The process involves incorporating 0.07-1.2 parts solubilized sodium silicate.

•

Structure Saver: Coating metal structures with a film of polyperfluorobutadiene, then treating the film with fluorine *in situ* is claimed to produce an adherent coating resistant to corrosion by halogens and metal halides, according to U.S. Pat. 2,711,972.

•

Parathion Peril: A $500,000 fire caused by lightning at Superior Fertilizer and Chemical Co. (Tampa, Fla.) last month was described by the Tampa assistant fire chief as the worst in their history for "danger to the individual fire fighter." Reason: fumes from burning bags of parathion and water splashing from the bags constantly menaced fire fighters, brought two near death. In a delayed-action effect, paralysis struck two of the firemen after they took showers back at the station. Repeated shots of atropine brought the men around again. Because only two of the firemen were in serious condition, original fears—that spreading fumes might be dangerous to spectators—were quieted.

•

Brake Fluid Brakes: Legislation governing sale of brake fluids has been enacted in California (*CW, July 9, p. 78*) and North Carolina, bringing the total number of states having such laws to four. In both new laws it is specified that the container must be labeled with the name of the manufacturer or distributor, that a certificate of quality must accompany applications for approval. At any time the state may test a brake fluid and, if found below standard, cancel approval. The California law requires a $100 brand registration fee and a $50 renewal fee.

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